DTIC
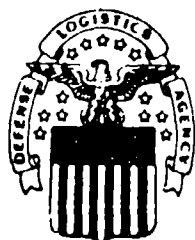
JUN 01 1991

DLA-91-P00249

Rapid Response Mobilization Indicator

OPERATIONS RESEARCH AND ECONOMIC ANALYSIS OFFICE
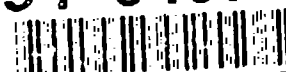
DEPARTMENT OF DEFENSE
DEFENSE LOGISTICS AGENCY

May 1991

DLA-91-P00249

Rapid Response Mobilization Indicator

Captain Mark S. Melius, USA

Accession For

NTIS GRA&I	☐
DTIC TAB	☐
Unannounced	☐
Justification	

By
Distribution/

Availability Codes

Dist	Avail and/or Special
A-1	

DEFENSE LOGISTICS AGENCY

FOREWORD

During the early stages of Operation Desert Shield (ODS), the Defense
Logistics Agency (DLA) energized several programs in anticipation of
large supply requirements from the Military Services. One such
program was the Industrial Preparedness Program (IPP) which was
managed by the Production Policy Branch, Production Division,
Directorate of Contracting (DLA-PRS). During the ramp up phase of ODS
it became apparent to DLA-PRS personnel that they required an enhanced
capability for effectively assessing the readiness posture of the
Agency in supporting the Military forces in the Middle East. Such
information would be critical in identifying areas in which rapid
industrial support would be required.

The DLA Operations Research and Economic Analysis Office was tasked by
DLA-PRS to develop an analytical tool to assist DLA IPP planners and
item managers in identifying possible problem areas. The successful
development of this tool provides DLA an enhanced capability to
anticipate and plan Services' materiel requirements associated with
contingency operations. This report describes the methodology used
for developing the tool as well as provides an analysis of its output.

CHRISTINE L. GALLO
Deputy Assistant Director
Policy and Plans

iii

CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The Defense Logistics Agency (DLA) has several ongoing programs which focus on developing and maintaining materiel support plans during a time of military mobilization. One such program is the Industrial Preparedness Program (IPP). The responsible office for its execution is the Production Policy Branch, Production Division (DLA-PRS), of the Directorate of Contracting. A major aspect of this program is the development and administration of production agreements with industry. These agreements involve the production of materiel during the time of mobilization.

At the onset of Operation Desert Shield (ODS), DLA-PRS identified a requirement for an enhanced capability to effectively assess the readiness posture of DLA to support projected materiel demands based on the deployment of Military forces into the Middle East. Such information was critical for the early identification of areas in which rapid industrial support and corresponding procurement actions would be required.

In that light, the DLA Operations Research and Economic Analysis Management Support Office was tasked to develop an analytical tool which would provide information to answer the following set of questions:

* What is the Agency's expected readiness posture for meeting the anticipated materiel needs during ODS?

* Which DLA-managed items have the potential of becoming a problem due to an inventory shortfall?

* What will be the degree of that shortfall?

* What procurement actions will be needed to correct the project shortfall?

* When will these procurement actions need to be made?

* What will be the funding requirements to support these procurement actions?

Within a month of the study request, methodology and a prototype model had been developed. As a result of the favorable review of the test runs and the deteriorating conditions within the Middle East, the Supply Management Division (DLA-OS), Directorate of Supply Operations made a supplemental request. That request involved determining additional funding requirements needed by DLA's four hardware centers (Defense General Supply Center (DGSC), Defense Industrial Supply Center (DISC), Defense Electronics Supply Center (DESC), and Defense Construction Supply Center (DCSC)) to support a select list of Army weapon systems deployed in ODS.

Based on the successful development of the requested analytical model, the study recommendations are:

* Model results should be used to prioritize Agency efforts in IPP as well as identify candidate NSNs which could be included in the IPP.

* Model results should be used to identify critical items requiring augmented safety stocks and/or actions to reduce production lead time requirements. Information gained from the model can be used to determine the proper balance between inventory levels and a responsive industrial base.

* The model should be used throughout the Agency to support current and future contingency operations. This will provide DLA with a ready source of information to assess projected support requirements. It will also help quantify resource requirements during the planning phase of a contingency operation.

* With respect to the DLA-OS request, the model identified a requirement for $172.2 million in additional funding to support the Army's weapon system materiel needs for ODS.

* Future enhancements to the model should be planned. These efforts should focus on developing an exportable version of the model which make it both user-friendly and compatible with production (real time) data files.

I. INTRODUCTION

For some time, Defense Logistics Agency's (DLA) Production Policy Branch, Production Division, Directorate of Contracting (DLA-PRS) had envisioned an enhanced capability for assessing how prepared the Agency was in supporting the Services' projected War Reserve Materiel Requirements (WRMR). Such capabilities would provide Industrial Preparedness Program (IPP) planners with valuable information for identifying and prioritizing production planning workload. The development and implementation of an enhanced analytical tool would provide managers with an improved capability for identifying potential supply problems, assessing potential risks, and serving as a valuable source for basing critical resource allocation and programming decisions.

During the initial stages of Operation Desert Shield (ODS), it became more apparent that such capability was urgently needed. It was felt that the development of this model would assist Agency managers and planners in decreasing the "risk" associated with inventory shortages for critical weapon system items deployed in ODS. DLA-PRS was interested in quantifying DLA's expected funding expenditures and identifying required procurement actions associated with supplying hardware related materiel for ODS.

Based on the above functional description for an analytical tool, a prototype model was developed. Results from that effort were subsequently presented to key management personnel from the Directorate of Contracting (DLA-P). As a result of the favorable review at that meeting, a follow-on briefing was provided to the Director of Supply Operations (DLA-O). That meeting resulted in a request by the Supply Management Division, Directorate of Supply Operations (DLA-OS), for a supplemental study effort to identify additional DLA funding requirements to support specific Army weapon systems (Appendix A) deployed in ODS.

The DLA-OS request was initiated in response to briefings given by the Commanders of both the Army's Aviation Systems Command (AVSCOM) and Tank/Automotive Command (TACOM) to the Director of DLA. Those presentations provided information on the Army's potential cost to support the selected list of weapon systems (Appendix A). Based on those cost initiatives, DLA's leadership felt it would be prudent to identify the Agency's potential unprogrammed support costs. The resulting funding requirements would then be used in justifying requests for additional funding.

II. PURPOSE. DLA-PRS requested that the DLA Operations Research and Economic Analysis Management Support Office (DLA-DORO) develop a model which could be used to enhance DLA's Industrial Preparedness Program. Thus, the purpose of the study was to develop an analytical tool which calculates a DLA readiness posture as well as project time-phased inventory shortfalls and procurement requirements for a specific contingency operation. In addition, this tool was to provide an adequate degree of "what if" capabilities to assist DLA's planners in making critical resource allocation and programming decisions.

III. **OBJECTIVES**. The intent of the project was to design and develop an analytic tool that would be used by DLA planners in addressing the following questions:

* What is the expected readiness posture of the Agency during the initial stages of a contingency operation?

* Which DLA-managed items have the potentiality for an inventory shortfall?

* What will be the degree of that shortfall?

* What procurement actions will be needed to eliminate the shortfall?

* When will these actions take place?

* What will be the funding requirements associated with these actions?

IV. **SCOPE**

The overall study encompassed two separate, but related, analytic efforts. The initial DLA-PRS effort focused on identifying DLA's readiness posture and associated procurement requirements for National Stock Numbers (NSNs) related with 150 weapon systems (see Appendix B) deployed in ODS. Demand rates for those NSNs were based on 25 percent of the Services' identified war reserve requirements. These requirements were then added to normal supply rates to form aggregate demand requirements. The analysis encompassed a 6 month time period.

DLA-OS's request reduced the number of weapon systems to 32 Army systems (5 systems managed by AVSCOM and 27 systems managed by TACOM, see Appendix A for listing of systems). ODS specific demand rates were generated by a factored increase in the Army's normal demand rates. These factors were provided by the Army and were used to reflect expected increases in weapon system usage during ODS. As with the DLA-PRS request, ODS related rates were combined with normal usage rates to form aggregate supply requirements. The time interval used for the DLA-OS request was set at 12 months.

Based on guidance provided by both DLA-PRS and DLA-OS, the analysis was limited to NSNs managed by DLA's four hardware centers (Defense General Supply Center (DGSC), Defense Industrial Supply Center (DISC), Defense Electronics Supply Center (DESC), and Defense Construction Supply Center (DCSC)).

V. **ASSUMPTIONS**.

* Non-ODS demand rates would continue at current levels and remain constant over time.

* Inventory Reorder Points (ROPs) and Objective Quantities (OBJ QTY) were valid (identified by DLA's item data files) and would remain fixed throughout the analysis.

     * With respect to DLA-PRS's request, ODS demand rates would be determined by taking 25 percent of their identified Other War Reserve Materiel Requirements (OWRMR). ODS demands would be allowed to vary over time based on the changes in the Services' monthly adjusted WRMR figures.

     * With respect to DLA-OS's request, ODS demand rates would be represented by a factored increase in normal demand rates. It was assumed that these factors accurately reflected the increased operational usage of the associated systems. It was further assumed that these demand rates would remain constant over time. In cases where an NSN was associated with more than one weapon system, the highest factor was applied.

     * Procurement actions would be placed when an item's inventory position dropped below its ROP.

     * Administrative lead times were assumed to be minimal. They were not accounted for in calculating the overall time it took to place an order. This was based on the assumption that streamlining of administrative requirements would occur during ODS.

VI.   LIMITATIONS

     * DLA quarterly demand files were used in developing input data bases. This resulted in a dated picture of the Agency's readiness and inventory postures.

     * Based on the aggregate nature of DLA's data, ODS demand rates could not be directly tied to the specific force structure deployed in ODS (i.e., taking into account specific weapon systems' densities associated with the operation).

     * Only NSNs associated with key weapon systems were analyzed.

VII.   METHODOLOGY

A.   Initial Readiness Value Indicator

A key aspect of DLA-PRS's request involved the development of a readiness indicator. This indicator was intended to be used by item managers and IPP planners in assessing DLA's ability to meet initial contingency demands at the NSNs level. The algorithm used in calculating the indicator value was:

$$\text{Readiness Value} = \frac{\text{On-Hand + Due-in - Due-out Stocks}}{\text{OWRMR} * .25}$$

Variables listed in the numerator were obtained from DLA's quarterly commodity item files and were used to represent the item's inventory position at the end of the 3rd Quarter of the 1990 Fiscal Year (FY). The demand variable (identified in the denominator as OWRMR) was obtained from the Consolidated War Reserve Records File. The OWRMR reflected the Services' estimated adjusted war reserve requirement, for an NSN, during full mobilization. The 25 percent factor was provided by DLA-PRS and was used to adjust the OWRMR to a more

modest rate that reflected the expected requirements of ODS.

For the DLA-OS request, the above algorithm was modified to account for both normal and ODS demand rates. The equation used to calculate the readiness indicator for the DLA-OS request was:

Readiness Value =   On-Hand + Due-in - Due-out Stocks
                     Normal Demand Rate + Army's Projected ODS Demand Req.

B.   Introduction to the Inventory Process

The basic theory behind Wilson's Economic Order Quantity (EOQ) model was used in developing the model's inventory process[1]. The focus of the process involved calculating an NSN's inventory position (INV POS) over time. An NSN's inventory position was defined by the following equation:

Inventory Position = On-Hand Qty + Due-In Qty - Due-Out Qty

By tracking an NSN's inventory position over time, shortfalls (due-out quantities) and required procurement actions were then projected. Figure 1 shows how the basic inventory process functions.

Figure 1
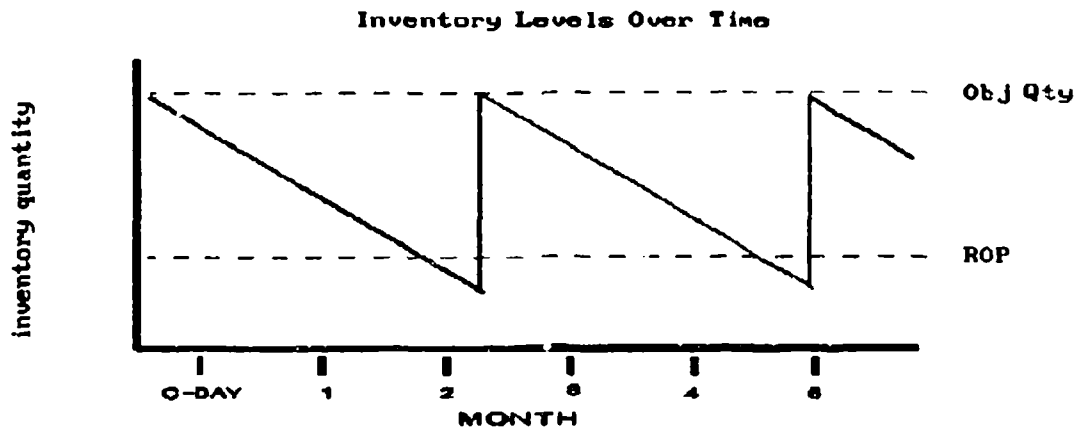
Figure 1. Graphical Example of Wilson's EOQ model.

1. NOTE: For the most part, on-hand inventory levels will be used in describing how the inventory process was developed within the model. This approach greatly simplifies the discussions.

As shown by Figure 1, inventory levels normally take on a "sawtooth" pattern over time. The high point of the pattern occurred at the **Objective Quantity (OBJ QTY)**. This calculated value represented the optional upper limit of an item's inventory level.

The downward movement of inventory levels reflect the withdrawal of items over time. Within the model, these withdrawals were represented by the combined (both non-ODS and ODS related requirements) demand rates.

Replenishment orders were placed when inventory levels reached the **Reorder Point (ROP)**. The ROP reflect expected supply requirements between the time the order was placed and when the order was to be received (for the remainder of the report this interval will be defined as **Lead Time (LT)**. In some cases, the ROP may have also contained safety stocks which were reserved for unforeseen demand requirements.

Order quantities were then calculated by taking the difference between the INV POS and the OBJ QTY. Note in Figure 1 that on-hand inventory levels did not immediately move back to the OBJ QTY line after falling below the ROP. This delay occurred because of the lead time requirements.

C. **Relating Study Objectives to the Inventory Process**

It was the replication of the above "sawtooth" pattern which was used in addressing the study objectives. By analyzing the components that made up the pattern, critical information was then obtainable to answer the questions identified in Section III. The components that were of interest were:

1. Order (Purchase Request) quantities

2. Dollar value of order

3. Time requirements for placing an order

4. Lead time requirements

Figure 2 shows how the components fit into the inventory process.

Figure 2

Key Components for Analysis
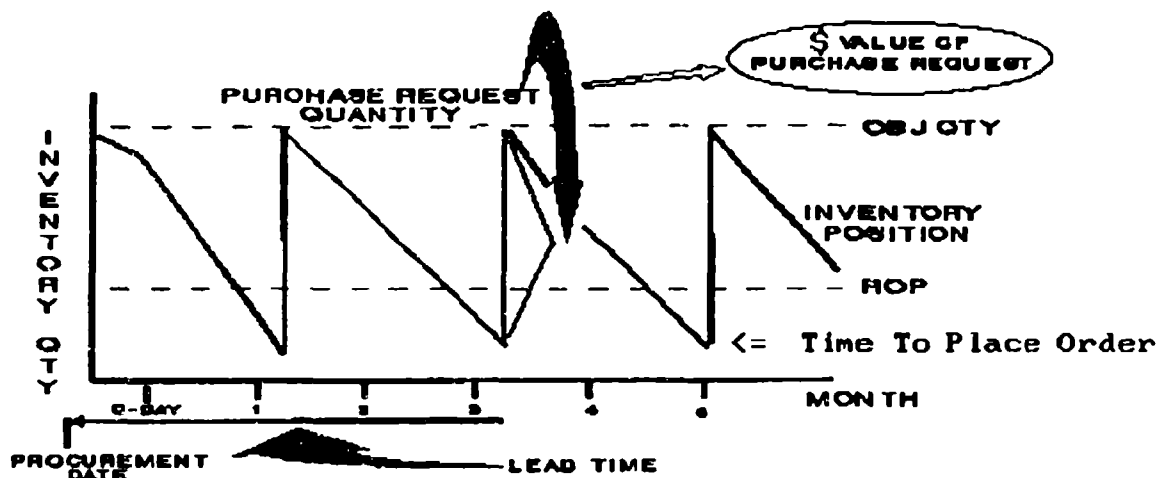
Figure 2. Graph of key process components superimposed onto Wilson's EOQ Model

Figure 3 displays the equations and the interrelationships required for gener-
ating values for these components. The best way to explain these equations is
by relating them back to the questions listed in Section III. The questions,
as well as a short explanation of the equations, are provided below:

        a. __Which DLA-managed items have the potentiality for an
inventory shortfall?__ These items were identified in the model if the on-hand
inventory balance fell below zero. The on-hand inventory levels were identi-
fied by using the following equation:

$$\text{On-Hand Qty} = \text{INV POS} - \text{Due-In Qty} + \text{due-out Qty}$$

        b. __What will be the degree of the shortfall?__. Measuring the
degree of inventory shortfall was assessed in the model by observing the
magnitude of the negative on-hand inventory value (or by observing the size of
the Due-Out Quantity).

        c. __What procurement actions will be needed to eliminate the
shortfall?__. Procurement actions refer to the placement of an order. As shown
in Figures 2 and 3, those actions occurred if an item's inventory position
(INV POS) fell below its ROP. The procurement quantity needed to eliminate
the shortfall (RQTY) was calculated using the equations in Figure 3.

        d. __When will these actions take place?__ Procurement actions
occurred each time an item's inventory position fell below the ROP. As shown
in Figure 3, inventory positions were determined on an incremental basis. At
the beginning of each iteration, the due-in file was checked to see if any
due-in quantities arrived during the time increment. If there were arrivals,
the ON-HAND quantity was adjusted to reflect the increase of on-hand stock.

6

Concurrently, the due-in (DLA CONTRACT FILE) quantity was appropriately re-
duced. Withdrawal of stocks were then made by subtracting the combined demand
rate and any due-out quantities for that time increment.

Figure 3
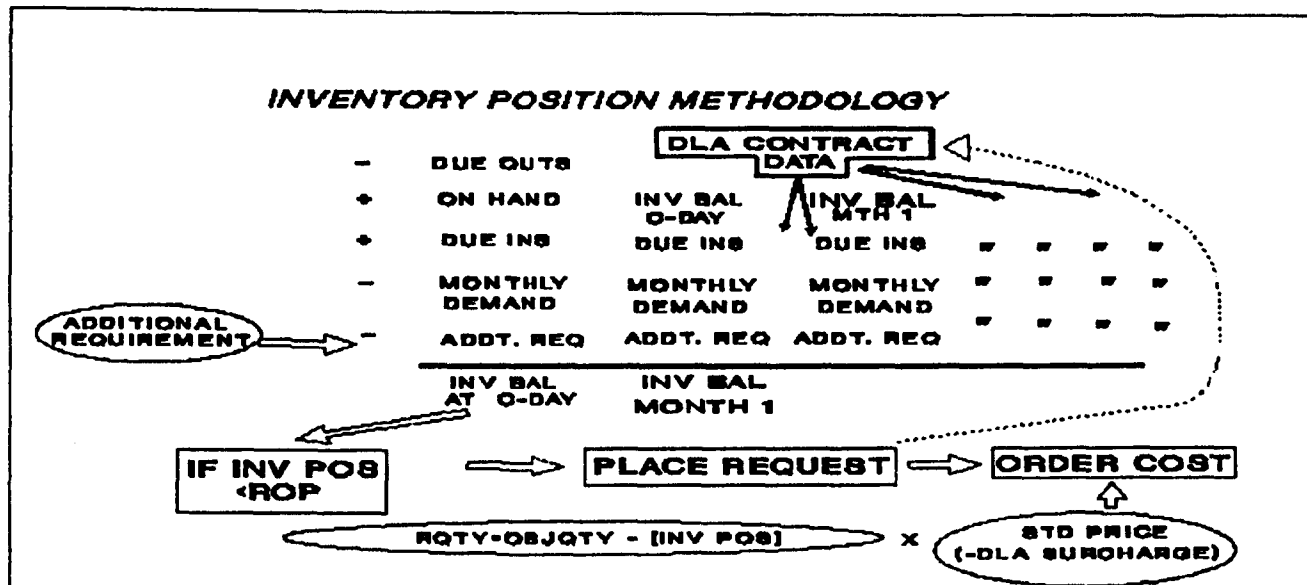
Figure 3. Graphical portrayal of the methodology used to calculate the key study parameters. Notice
the interrelationships between the parameters.

At the end of each iteration, a check was made to determine if the inventory
position had fallen below the ROP. If it had, a procurement action was gener-
ated. That action triggered an update to the due-in file. That update in-
volved the creation of a due-in record that identified the order quantity and
the month in which the stocks were to arrive. (Note the line between the
"PLACE REQUEST" box and the "DLA CONTRACT DATA" box in Figure 3.) Finally,
the ending inventory balance of the current time increment (month), was used
to initialize the beginning balance for the next iteration. This process was
then repeated for as many time increments as required.

The primary purpose for addressing the above question was to provide informa-
tion for developing proactive procurement strategies in support of contingency
operations. Based on further examination, it was felt a better way to address
the issue was to modify the above question in the following manner (the ap-
proach is shown in the lower portion of Figure 2):

When will orders need to be placed in order to meet demands?

The answer to this question was obtained by using the following equation
(equation variables represented monthly increments):

Projected Procurement Date = (Date Inv. level hit the ROP) - (Lead time)

7

e. **What will be the funding requirements associated with these procurement actions?**

Funding requirements were determined by multiplying the quantity ordered by the item's standard unit cost less DLA's surcharge (the additional charge DLA places on an item to account for its handling/storage/overhead costs). The equation used in the model was:

Order Cost = Order Qty * (STD Unit Price * (1 - DLA Surcharge)

** Note: DLA FY 1990 Surcharge = .148 **
           Source: Published DLA Surcharge rates for DGSC (dated 3 Aug 90)

Valuable summary data was also obtained by totaling the specific order costs in various ways. Based on study requirements, summary information was calculated in the following categories:

> (1) Monthly funding requirements for an NSN.

> (2) Total overall funding requirements for an NSN.

> (3) Aggregated monthly funding requirements.

> (4) Overall funding requirements for the analysis period.

D. Input Data Development

The first step in conducting the analysis was to construct the input data file. This effort involved extracting and screening supply data from several DLA Integrated Data Bank (DIDB) files. (See Appendix F for computer code.) The cutoff date of these files was the end of the 3rd quarter, FY 1990 for the DLA-PRS request and the 4th quarter, FY 1990 for DLA-OS. Figure 4 (for DLA-PRS's request) and Figure 5 (for DLA-OS's request) show how the input data files were developed.

The first step in developing these files involved identifying the NSNs associated with selected weapon systems. This task was accomplished by matching the Weapon System's Designator Codes (WSDCs) contained in the quarterly commodity Material Readiness System Weapon (MRSW) files against WSDCs for systems in the appropriate weapon systems listing (Appendixes A & B). When a match occurred, the associated NSN from the MRSW files was appended to the input file. In many cases it was possible for an NSN to be associated with more than one system. When that occurred, the NSN was only listed once. Additional information pertaining to the Essentiality Code (EssC) was also retained. Since an NSN could have multiple EssC's, (i.e., an NSN supported more than one weapon system and had a different EssC for each system) a screening process was established to retain only the highest EssC for that NSN.

8

Figure 4

INPUT DATA BASE DEVELOPMENT
(DLA-PRS REQUEST)
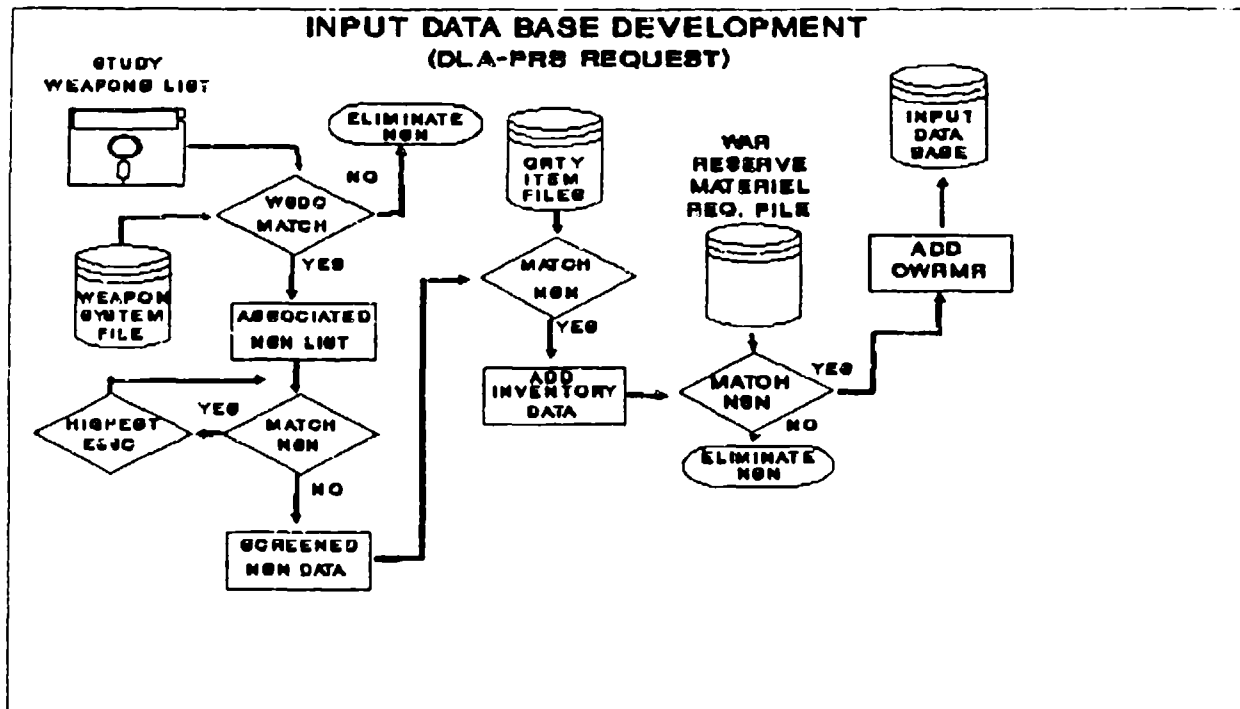
Figure 4. Diagram of the process used in developing the input data base for DLA-PRS's request.

The second step was to append the necessary NSN inventory data to initiate and control the modeling process. Data for this task was obtained from quarterly commodity item information files. Fields in which data was extracted were the NSN, item name, unit price, production lead time, back order quantities, due-in quantities, on-hand quantities, OBJ QTY, annual demand quantity, ROP, Item Category Code (ICC), Procurement Cycle Months (PCM), quarterly forecasted demand quantity, annual demand quantity, and Supply Status Code (SSC).

For DLA-OS's request, the above data was further screened. That process involved eliminating all non-stocked NSN records (SSC=2 or 3), NSNs with no supply status (SSC=0 or blank), and NSNs that were to be retained because the item was used or its on-hand balance fell below the wholesale level (SSC=9). In addition, if the ICC equaled "1" or "P" (item was demand supported) the listed OBJ QTY was recalculated by using the following equation:

$$OBJ\ QTY = ROP + (PCM\ /\ 3) * QFD$$

Figure 5

INPUT DATA BASE DEVELOPMENT
(DLA-OS REQUEST)
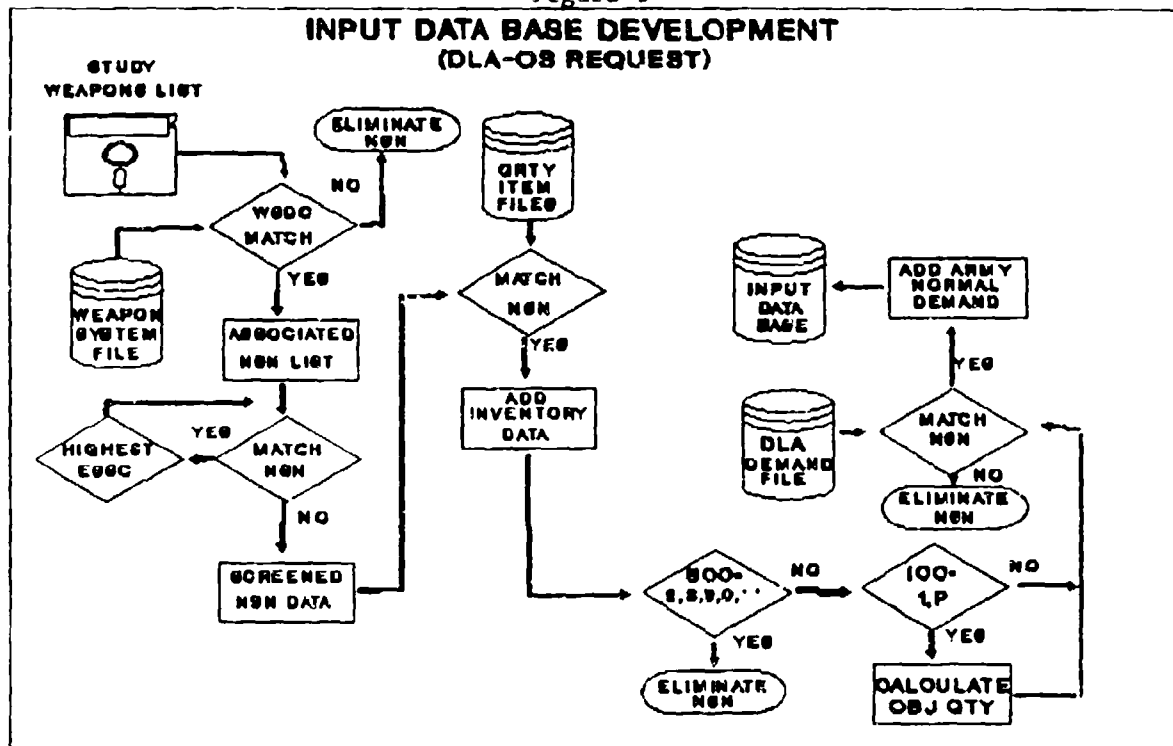
Figure 5. Diagram of the process used in developing the input data base for DLA-OS's request.

The final step was to append the projected ODS related demand rates. For DLA-PRS's request, ODS demand data (OWRMR and the monthly adjusted WRMR) was obtained from the Consolidated War Reserve Records files. For DLA-OS's request, ODS requirements were developed by determining the Army's portion of DLA's annual demand requirements for the identified NSN. This data was obtained from DLA's demand history files.

E   Calculating DLA-OS's "Net" ODS Funding Requirements.

To obtain an accurate assessment of net ODS funding requirements, normal demand rates (see Section V) had to be taken into account. To accomplish that task two computer runs were made. The first run involved calculating inventory levels and procurement requirements under a normal demand environment. A second run was then made using both normal and ODS demand requirements. By calculating the differences between the two runs, net requirements were then identified.

F   Output Data and Report Development

Layout of the output files directly reflected the process shown in Figure 3. Analysis of output data was initially made from mainframe output files. By creating small utility programs, summary information was generated about funding and lead time requirements.

10

Special purpose data files were also created and downloaded to a personal computer. **Dbase III** was used to manipulate the data and generate various summary reports. One example of a special purpose file was the generation of a report for the Army's AH-64 Apache helicopter (See Table 1 (extract from actual report)). Layout for both the mainframe and Dbase III output files and reports were structured in a manner to chronologically track an NSN's inventory and procurement activities over time. By analyzing the report, assessments were made about the lack of inventory for specific NSNs, funding requirements associated with supporting the weapon system, and lead time requirements associated with the procurement actions.

Information provided from the Dbase III reports (see Table 1) were the NSN, item description, NSN's readiness value, monthly on-hand inventory balance, monthly requisition quantity, monthly requisition cost, and a required ordering date. The order date referred to the date in which the order should have been placed in order to meet the demand of that month. As an example, a value of -10 would mean that an order should have been generated 10 months prior to the start of the contingency operations.

Funding data was also provided in these reports on a summary basis. In Table 1, cumulative funding requirements were generated for: each NSN (the last column of the report), each month (the bottom row of each REQUISITION COST column), and an overall assessment (last column total (for the AH-64 example, the overall cost was $181,461.69 for a 6 month period)).

VIII. **ANALYSIS OF RESULTS**

A. **Introduction**

This section concentrates on explaining the model's capabiliti   · ' results. The majority of the discussions will focus, at a summary level,   ·e analysis of DLA-OS's request.

The model was designed in a manner to provide both detailed examination (micro level) of specific procurement activity for an NSN as well as an Agency-wide (macro level) assessment of projected capabilities and shortcomings in meeting contingency supply requirements. At the micro level, specific supply problems were identified and tracked over time. Information was generated to identify what and when procurement actions were needed as well as how long it would take for such actions to eliminate an inventory shortfall.

At the macro level, Agency managers and planners were provided information to:

      1. Ascertain the Agency's ability to support surge requirements associated with contingency operations.

      2. Develop effective procurement/production strategies.

      3. Accurately project financial requirements.

11

Table 1

AH-64 APACHE
Contingency Item Requirement Listing

DISC

NSN	ITEM DESCRIPTION	READINESS VALUE	C-DAY INVENT BALANCE	C-DAY REQUIST QUANTITY	C-DAY REQUISITION COST	REQUIRED REQUEST DATE	MONTH 1 INVENT BALANCE	MONTH 6 INVENT BALANCE	MONTH 6 REQUIST QUANTITY	MONTH 6 REQUIST COST	MONTH 6 REQUIRED REQUEST DATE	TOTAL ITEM REQUISTION COST
3120012866148	BEARING,SLEEVE	0.000	-2	0	4.37	-14	-10	-77	84	40.730	-6	143.75
5340012553522	BRACKET	0.000	0	3	0.77	-13	0	-3	6	1.530	-7	6.90
5310011819366	WASHER,FLAT	0.000	-160	160	31.35	-12	-354	-1672	1672	327.040	-6	1161.44
3120012866160	BUSHING,SLEEVE	0.000	0	0	0.00	-12	-9	-99	99	59.890	-6	185.11
3120012875037	BUSHING,SLEEVE	0.000	0	7	17.06	-11	-6	-63	70	170.570	-5	504.81
3120012880217	BEARING,SLEEVE	0.000	0	0	0.00	-11	-14	-151	154	128.580	-5	335.77
3120012872976	BUSHING,SLEEVE	0.000	-28	28	4.29	-11	-66	-316	316	40.400	-5	175.75
3120012873510	BUSHING,SLEEVE	0.000	0	7	1.13	-11	-6	-63	70	11.330	-5	38.85
3120012585275	BUSHING,SLEEVE	0.000	-19	25	1.49	-11	-242	-2455	2461	146.770	-5	459.05
5306012521371	BOLT,EYE	0.000	-3	7	4.59	-11	-8	-38	42	27.550	-5	110.87
5310011704266	WASHER,KEYWAY	0.000	-326	326	240.98	-11	-703	-3191	3191	2440.860	-5	6917.11
3110010788986	BEARING,BALL,AIRFRA	0.000	-17	17	4.20	-10	-41	-201	201	49.660	-4	178.14
3110001585878	BEARING,BALL,ANNULA	0.000	-445	445	15.17	-9	-857	-4447	4447	151.550	-3	546.81
3120012708536	BUSHING,SLEEVE	0.000	-14	25	1.49	-9	-36	-184	195	11.630	-3	43.96
3120012867232	BEARING,SLEEVE	0.000	0	0	0.00	-9	-14	-154	154	93.100	-3	206.73
5305012660188	SCREW,MACHINE	0.000	-228	228	5.78	-9	-484	-2129	2129	54.420	-3	200.52
5320011940734	COLLAR,PIN-RIVET,TH	0.000	-1708	1708	43.68	-9	-3566	-14626	14626	373.840	-3	1409.60
5330012598722	GASKET	0.000	-30	33	21.46	-9	-66	-307	310	229.700	-3	839.08
5310011725134	NUT,SELF-LOCKING,EX	0.000	-2247	2247	57.43	-8	-5009	-25054	25054	655.720	-2	2295.39
5306012509658	BOLT,SHEAR	0.000	-1	8	0.05	-7	-6	-52	57	0.450	-1	1.72
5306012340361	BOLT,U	0.000	0	3	0.72	-7	-14	-154	157	37.450	-1	118.09
5306011700902	BOLT,CLOSE TOLERANC	57.500	335	0	0.00	0	303	2	2	0.190	-4	23.34
5306011702865	BOLT	59.111	122	0	0.00	0	97	-209	209	89.030	1	234.30
5310011732223	WASHER,FLAT	81.132	2955	0	0.00	0	2662	-918	918	7.020	-4	30.24
2835010199914	COVER,VALVE,TURBINE	88.000	21	0	0.00	0	19	-8	9	2.530	3	3.09
5306011806863	BOLT,SHEAR	90.182	487	0	0.00	0	463	141	141	10.790	-4	10.79
5306011775838	BOLT,SHEAR	124.875	978	0	0.00	0	926	248	248	47.920	-3	631.33
5310011775798	WASHER,FLAT	137.159	2257	0	0.00	0	2014	-966	966	8.250	4	24.20
5340011563668	CLAMP,LOOP	218.296	1343	0	0.00	0	1099	11275	0	0	0	18.73
5330001799388	GASKET	218.886	5438	5438	46.31	-4	10194	105040	0	0.000	0	46.31
5330011634625	PACKING,PREFORMED	331.714	1092	0	0.00	0	937	1455	0	0.000	0	48.13
5306011308097	BOLT,SHEAR	358.000	224	224	11.45	-6	131	-1034	1034	52.860	0	140.12
5306002483144	BOLT,SHEAR	1471.000	1449	0	0.00	0	1491	809	809	13.790	0	13.79
5305011785006	SCREW,MACHINE	2088.000	494	0	0.00	0	432	-325	325	8.310	1	27.17
5310011725137	NUT,SELF-LOCKING,EX	2812.000	601	601	20.48	-1	981	9672	0	0.000	0	20.48

*** Total ***

| | | 10608.213 | | | 6888.33 | | | | | 5042.93 | | 18161.69 |

B. Assessment of Materiel Assets

The first area of analysis focused on assessing the Agency's ability to meet overall projected supply requirements. That was accomplished by first identifying the total number of NSNs associated with the weapon system listing. The next step was to determine the number of NSNs in which a procurement action was required. By subtracting the two figures, the number of NSNs in which enough stocks existed was determined. An aggregate stockage rating was then calculated by determining the ratio of total NSNs over the number of NSNs in which no procurements were required. Table 2 shows the resulting stockage support data for DLA's four hardware centers. The majority of DLA's hardware centers were able to meet the Army's projected 12 month materiel demands for over 50 percent of the NSNs without having to place a procurement order. Based on the results, the Agency had the internal assets to fully support about 57.5 percent of the Army's selected ODS supply requirements.

Such information would be valuable to DLA's managers in providing an initial assessment on how prepared the Agency was in providing logistical support during the initial stages of a conflict. Further interpretation of the data would provide management an awareness for the magnitude of preparation and procurement activity needed to support an anticipated military operations.

Table 2

DLA Stockage Support Data

	DGSC	DESC	DISC	DCSC
Total No. NSNs	4,881	9,386	18,356	38,447
No. NSNs w/ Stockage shortfall	2,359	3,957	9,742	14,160
Percent of line with adequate stocks	51.7%	57.8%	46.9%	63.2%

Readiness information was also available at the NSN level. Examples of that data were shown in Table 1 (see the column titled READINESS VALUE). These values varied widely from 0.000 to 2818.000. A value of 0.000 meant there were no stocks available to meet the initial demand (i.e., 0.00 percent readiness posture). A value of 1.000 would indicate that there were just enough stocks available to meet the initial demand (i.e., a 100 percent readiness posture).

C. Identification of Funding Requirements

Funding data was generated at both the micro and macro levels. At the item manager (micro) level, funding data was available for each NSN on both a monthly and summary basis. Item managers would be able to use the data for forecasting specific budgetary requirements.

By summarizing the micro level data, Agency level assessments were made about the magnitude and disposition of DLA funding requirements. As an example, information was generated to assess the distribution of total funding requirements by dollar thresholds (see Figure 6 and Appendix C). By analyzing the DLA-OS data, it was determined that less than $50.00 would be needed, per NSN, to meet all the necessary procurement actions for over 30 percent of the NSNs. In fact, for over 50 percent of the NSNs, less than $500.00 (per NSN) would be required to meet all ODS procurement needs. As a result, an overall assessment was made that most procurement actions would be of a low dollar value.

Figure 6

Frequency Dist. of Total Funding Req.
(Percent of Total Requirement)

< $50 30.61
$50 < $100 6.22
$100 < $500 15.61
$500 < $1,000 7.85
$1,000 < $5,000 24.07
$5,000 < $10,000 6.76
> $10,000 8.88

Selected Army ODS Funding Requirements
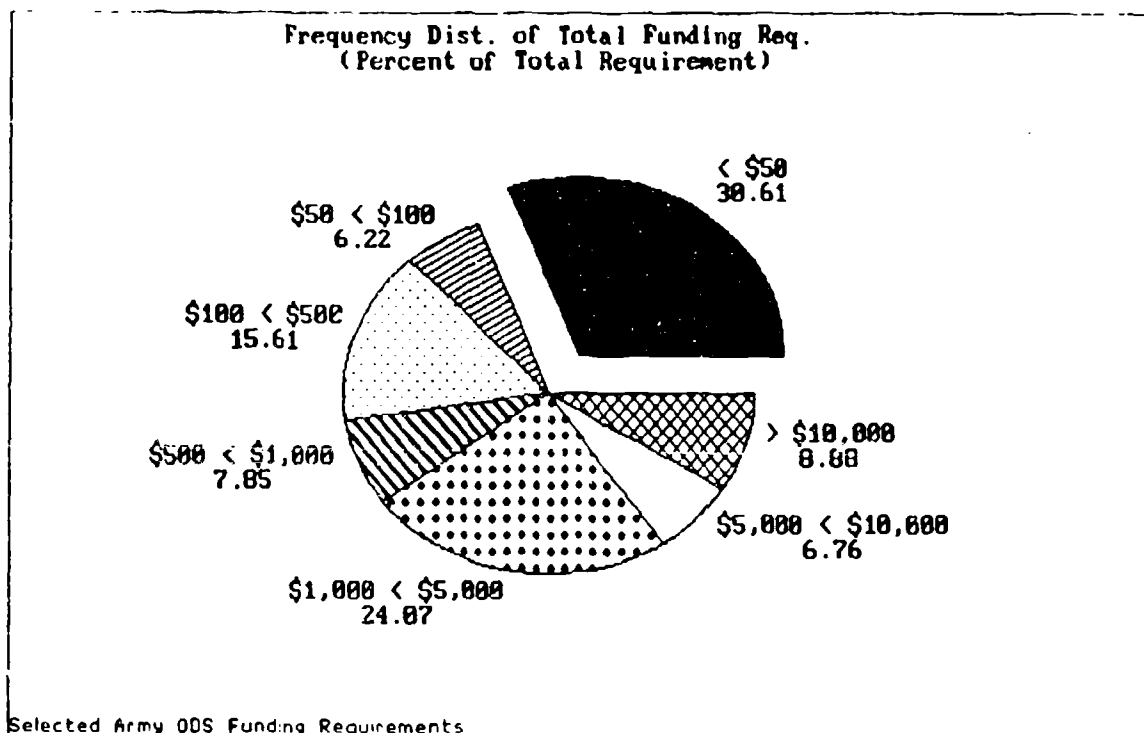
Figure 6. Pie chart shows the distribution of NSNs by the total funding requirements for DLA-OS's request. That portion of NSNs with total funding requirements of less than $50.00 has been cut way.

At the macro level, aggregate requirements were generated to show the distribution of additional funding by the hardware centers (see Figure 7). As shown by Figure 7, $172.2 million would be needed to meet all ODS related procurement requirements generated by the DLA-OS request. (Refer to Appendix D for disposition of requirements.) The distribution of funding requirements was fairly uniform among DGSC, DISC, and DCSC. DESC's smaller requirement was explained by the relatively low number and small dollar value of procurement actions (see Appendix C and D).

Figure 7
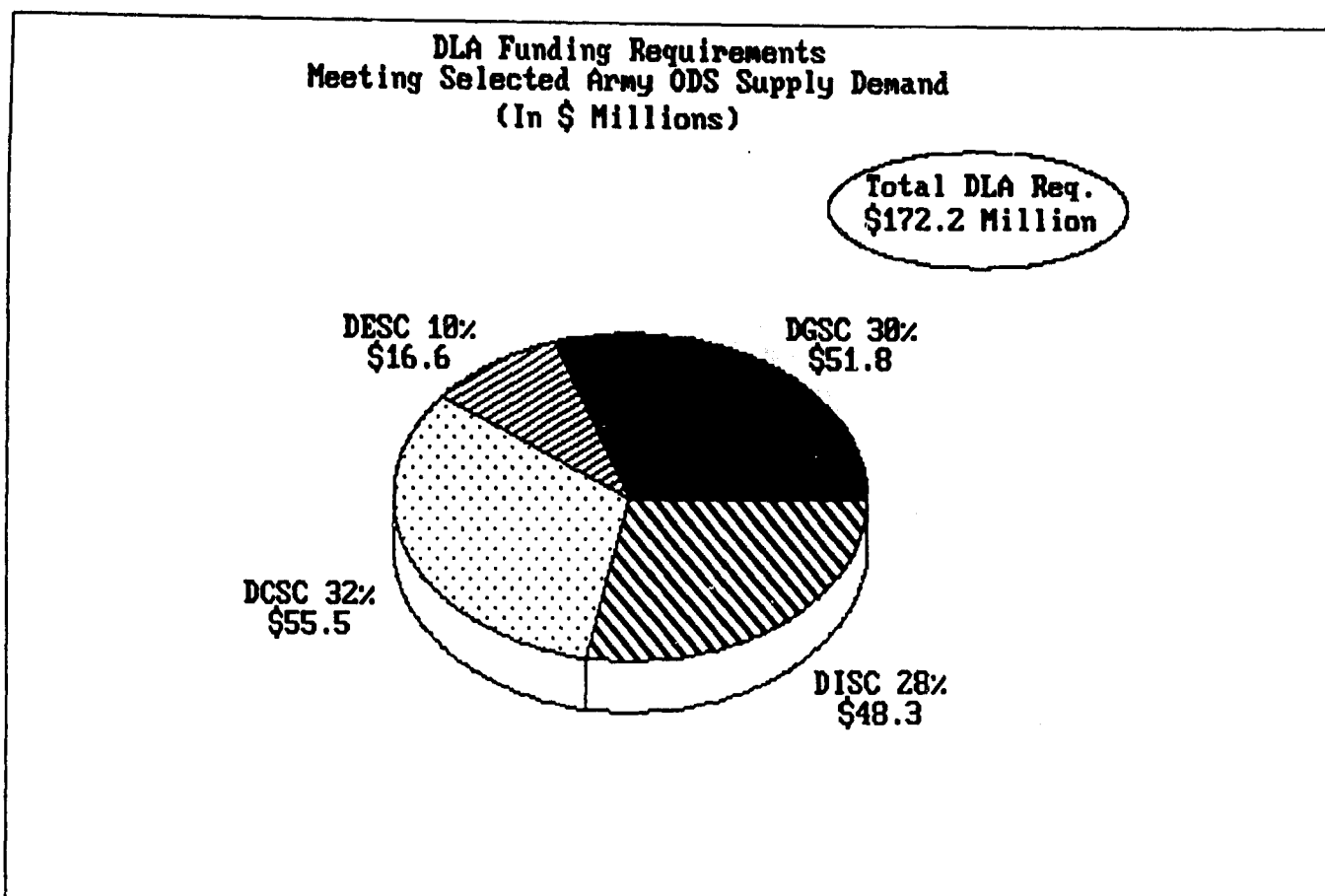
Figure 7. Pie chart displays the distribution of funding requirements among the four DLA hardware centers. A total DLA figure of $172.2 million is also shown. These figures represent the estimated funding requirements needed to procure the additional materiel to support the Army's projected demands (for the selected list of weapon systems (Appendix A)).

A monthly distribution cf funding data was also generated (see Figure 8). Such information provided a higher level of resolution of funding data. By analyzing the data, an assessment was made that a great deal of oscillation (bimonthly cycle) occurred in funding requirements over time. The bimonthly cycle was traced backed to demand rates and the values set for both OBJ QTY and ROP. What appeared to have occurred was OBJ QTY levels were set high enough to satisfy 2 months of demand. There also appeared to be a secondary cycling action between the bimonthly high points. That trend seemed to indicate the presence of a quarterly inventory cycle for a sizable number of NSNs. It appeared that a surge in procurement actions did not occur until about the 3rd month of the analysis. This would indicate that sufficient inventory was available to meet initial operational requirements.

Figure 8
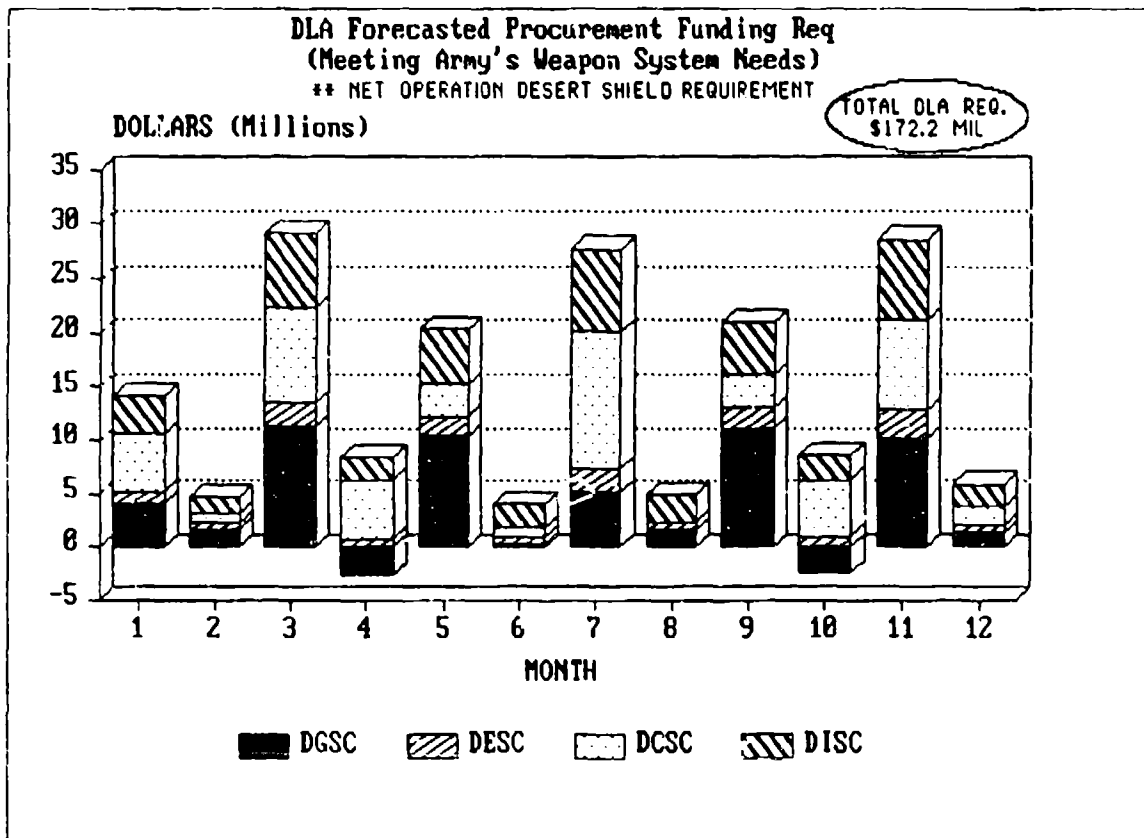
Figure 8. Graph shows the monthly distribution of funding requirements among the four DLA hardware centers.

As another interesting point, DGSC showed a negative (net) funding condition in both months 4 and 10 (see Appendix D). This anomaly was caused by the forward shifting of funding requirements. In other words, one of the impacts of increasing demand rates was to shift normal procurement cycling times forward. As shown in Figure 9, what occurred (given OBJ QTYs and ROPs were kept constant) was that procurements actions were made sooner and that the number of actions increased (three orders places versus two) given the same period of time. The negative values for DGSC represented by a net decrease in spending for months 4 and 10, was accounted for by a greater net increase in months 3 and 9.

Figure 9

INVENTORY EXAMPLE
(IMPACT OF CONTINGENCY REQUIREMENTS)
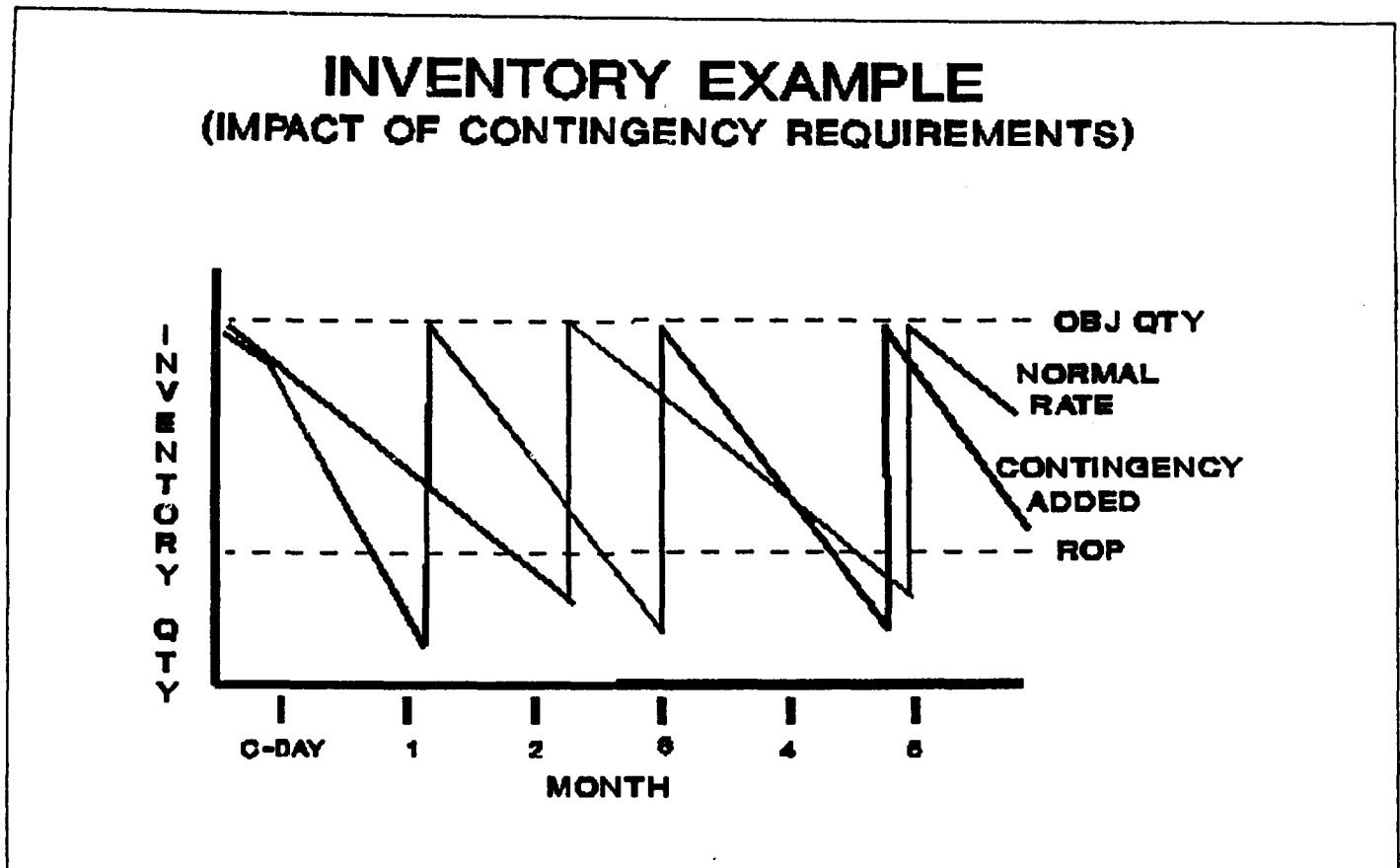
Figure 9. Line graph shows the impacts that might occur to a normal inventory process during the initial stage of a military deployment. Notice that orders would be placed sooner and more often than during normal conditions.

D. Impact of Production Lead Times

The last area of analysis focused on examining the impacts of production lead times on inventory levels. The thrust of that effort was directed towards the planning community to highlight the importance of developing IPP plans. A second issue behind this investigation was to assess response capabilities of the industrial base in fulfilling projected due-outs.

As an example, the item manager could look at a particular NSN and make an assessment of lead time impacts by tracking both the NSN's inventory position and required order dates over time. As shown by Figure 10, two parts, (Bearing (production lead time of 11 months) and Shear Bolt (lead time of 4 months)) from the Army's AH-64 Attack Helicopter were selected to demonstrate the point. Due-out levels for the bearing continued to increase over time (180 day window). On the other hand, some relief occurred with the Shear Bolt after several months. During a short contingency operation, impacts of the above situation may result in an unacceptably high level of risk of potentially critical parts.

17

In order to reduce the adverse impacts of the above situation, three proposed actions should be addressed. Those action are:

      1.   Insure IPP plans have been established with the appropriate manufacturer or supplier.

      2.   Pre-position "near-term" contingency demands by increasing inventory safety levels.

      3.   Investigate possible approaches to reduce lead time requirements.

Figure 10
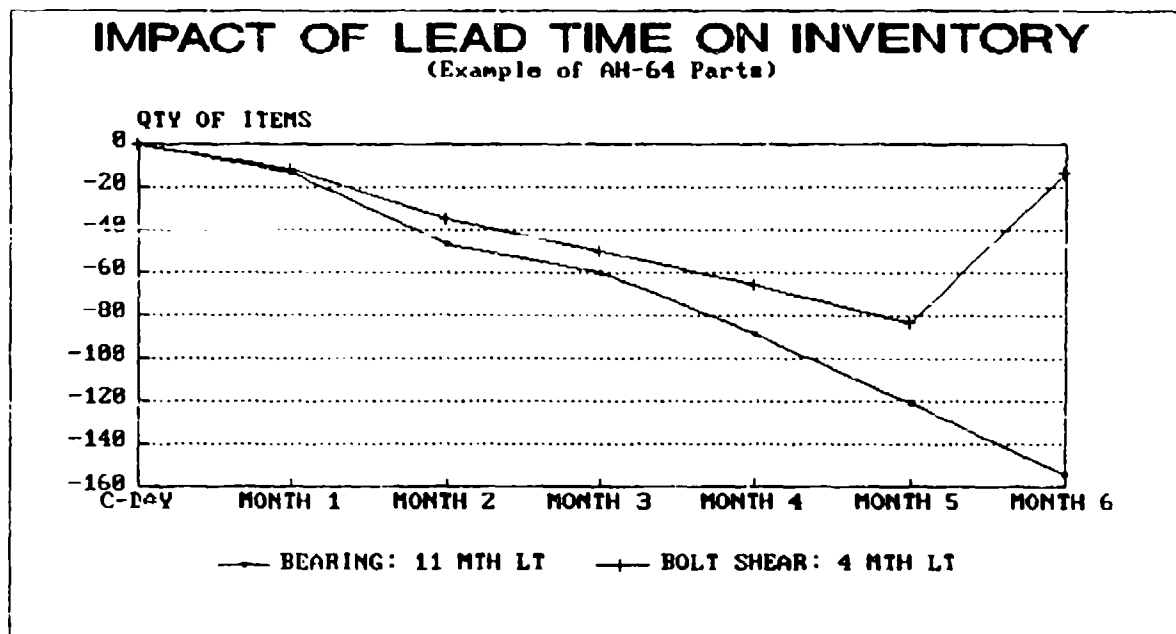
Figure 10   Line graph provides an example of the impacts of long lead times on inventory levels.

At the macro level, production lead time impacts were viewed in a broader perspective. Such information was designed to provide upper level management with a gauge for assessing industry's ability to respond to a rapid surge of materiel needs. One way to look at the issue was to stratify the NSNs by production lead time. As shown by Figure 11, an assessment was made that a relatively slow response would occur in receiving materiel from manufacturers or suppliers. (In the case of DISC managed items, most orders would take between 2 to 8 months to receive.) In several extreme cases, NSNs were identified with lead times of over 2 years. The identification of those NSNs would provide supply planners a clear signal that a pre-positioning of stocks may be necessary. Results from the other hardware centers showed similar results (see Appendix E).

Figure 11

Projected   Production Lead Time Requirements
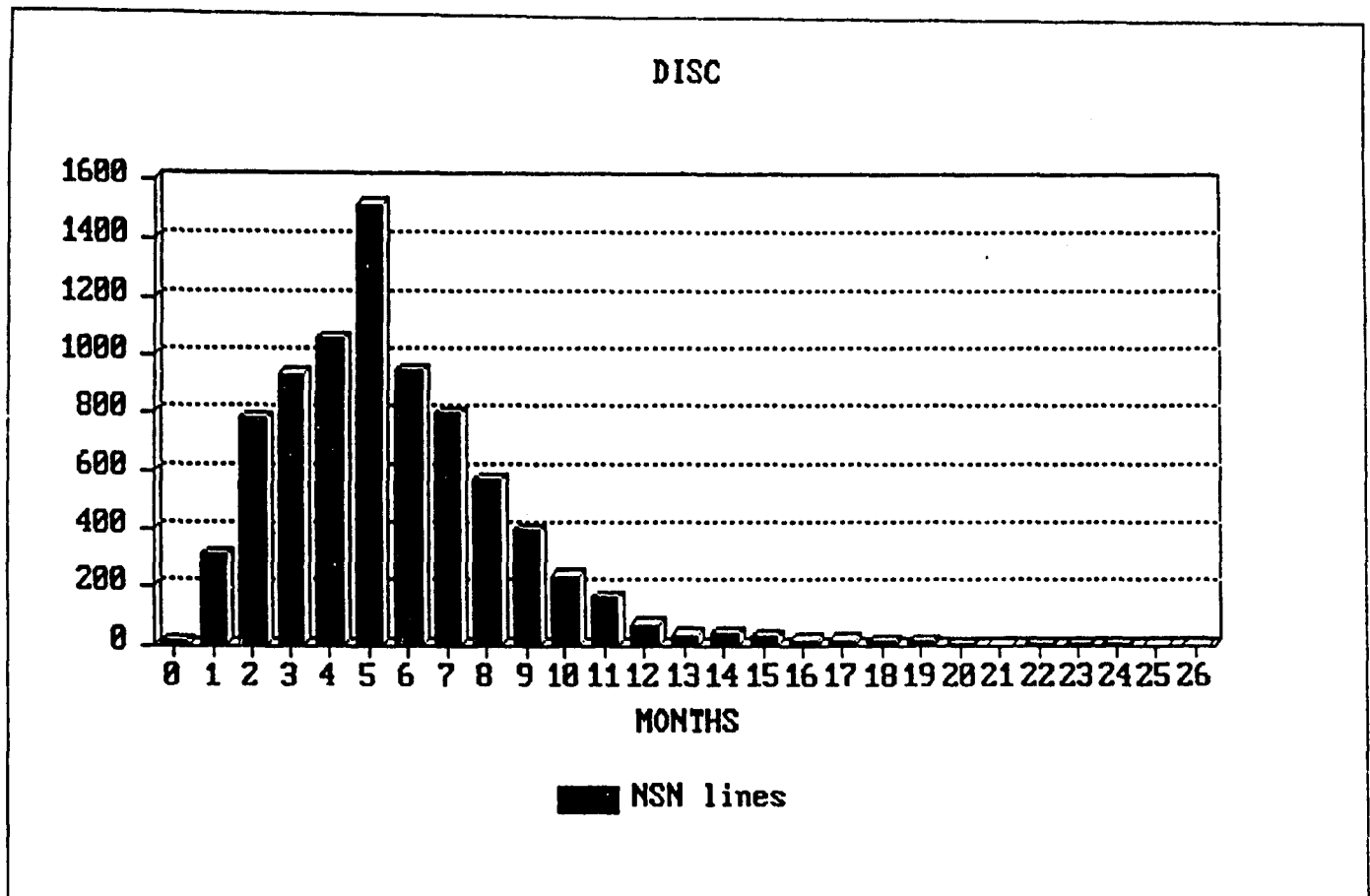
DISC

Figure 11. Bar graph displays the distribution of DISC-managed NSNs by its production lead times.

IX.   CONCLUSIONS

    * Development of the model is an important first step in the quest for
acquiring an internal capability for assessing DLA's readiness posture prior
to and during the initial stages of a military deployment.   Using the DLA-OS
data as an example, the Agency would be able to support   selected ODS related
supply requirements without additional   procurement actions for over 57 per-
cent of the NSNs.

    * The model   provides DLA planners with a logical and defensible ap-
proach for defining both funding and materiel requirements over time.   Fur-
ther, the model provides an effective means for developing detailed procure-
ment and IPP planning strategies for contingency operations, thus supporting a
graduated mobilization response capability.

19

* The model could be a valuable planning tool for IPP managers. Output data could be used in defining time-phased procurement/manufacturing requirements as well as forming the basis for IPP agreements with manufacturers. In addition, analysis results, specifically the readiness indicator values, could be used in developing strategies for allocating limited resources.

.* With respect to the DLA-OS request, approximately $172.2 million will be required to satisfy the Army's defined ODS demands. A detailed review of the results show that most procurement actions will be of a low dollar value.

* A major area of concern is the lack of a credible source for contingency related demand data. This is not a new problem and has continually plagued logistics war planners for years. Since contingency demand rates are the driving force behind the model's calculations, it is imperative that acceptance of the results be tempered with a true understanding of the study assumptions.

* Though the study focused on weapon system related items, the process could be easily adapted to other areas.

X.   RECOMMENDATIONS

* The model should be used throughout the Agency to support current and future contingency operations. Implementation will provide DLA with a viable source of data to effectively access projected support capabilities and identify unprogrammed resource requirements during the planning phase of a contingency operation.

* With respect to DLA-OS's request, it is recommended that at least $172.2 million in additional funding be sought by DLA to support selected Army weapon system materiel requirements deployed in ODS.

* Additional analyses should be conducted to improve DLA's contingency demand rates. One approach may be to conduct a follow-on analysis which would examine ODS related demand history files.

* Follow-on runs of the model (using the updated ODS related demand rates) should be conducted to provide both insight into the accuracy of the initial estimates, as well as, provide more accurate assessment for further procurement actions.

* With respect to DLA-PRS's request, the model should be used in developing future IPP plans. This model should augment DLA-PRS's current library of analytical tools used in identifying candidate IPP items, prioritizing workload, and developing production strategies.

* Future computer programming efforts should be planned to enhance the current model's capabilities. These efforts should focus on developing an exportable version of the model and enhancing the model's capabilities by making it compatible with production (real time) data files. This work should include the development of both an Agency and NSN monthly readiness indicator.

XI. **POTENTIAL BENEFITS**. The primary benefit of this effort was the creation of an analytical model which provides DLA managers valuable information for making critical resource allocation and planning decisions. This enhancement to the decision making process, prior to and during a contingency operation, would increase DLA's readiness capabilities in supporting the military services. The exact magnitude of the benefits obtained from this effort are impossible to quantify, given the task of having to put a price on the value of providing information. Use of the tool has already provided enormous informational value to the Agency by providing unprogrammed ODS funding estimates of wholesale logistical support requirements to key Army weapon systems.

APPENDIX A

Army Weapon Systems List for DLA-OS Request

Aviation Systems Command (AVSCOM)

Nomenclature	WSDC	Op-Tempo
Helicopter, Apache AH-46	61A	3.00
Helicopter, Kiowa OH-580	VHA	3.00
Helicopter, UH-60 Series	40A	3.00
Helicopter, CH47	05A	3.00
Fire Control System	GJA	3.00

Tank/Automotive Command (TACOM)

Nomenclature	WSDC	Op-Tempo
M1	36A	1.37
BFVS	37A	1.83
M88	GFA	1.25
M113	29A	1.32
M728	30A	1.42
2.5 Ton	KPA	1.40
M939	79A	1.93
HEMTT	72A	1.58
HMMWV	80A	1.35
5 Ton	79A	1.93
CUCV	75A	1.93
M915/916/920	73A	1.64
Trailer (ABT)	FZA	1.68
10 Ton	KVA	1.43
HEMAT	UWA	2.88
M551	07A	1.50
FAASV	FHA	1.13
Tractor	RPA	1.61
Scraper	FFA	1.61
Loader	FEA	1.61
Loader	JAA	1.61
Grader	FDA	1.61
Crane	JTA	1.61
Crane	JUA	1.61
Crane	JVA	1.61
Crane	KXA	1.61
Crane	KWA	1.61

APPENDIX B

Weapon Systems Listing for DLA-PRS Request

Description	Weapon Name		WSDC
AIRCRAFT	TOMCAT	F-14A	10N
AIRCRAFT,	INTRUDER,	A-6E	18N
HELICOPTER,	SEA STALLION,	CH-53A/D/E	41N
AIRCRAFT,	HORNET,	F/A-18	43N
LAMPS MARK III,	LAMPS MK III	SH-60B	44N
AIRCRAFT,	PROWLER,	EA-6B	45N
ENGINE,	AIRCRAFT,	J-52	49N
ENGINE,	AIRCRAFT,	T-64	50N
AIRCRAFT,	HARRIER,	AV-8B	55N
ENGINE,	AIRCRAFT,	F-402	68N
ENGINE,	AIRCRAFT,	F-404	69N
ENGINE,	AIRCRAFT,	TF-30	70N
CLOSE IN WEAPON SYSTEM,	CIWS-PHALANX		A1N
AIRCRAFT,	HAWKEYE,	E-2C	17N
PACKAGED POL ITEMS			37N
HELICOPTER,	SEA STALLION,	RH-53	42N
HELICOPTER,	COBRA/ATTACK,	AH/1T	46N
HELICOPTER.	COBRA/ATTACK,	AH-1J	47N
AIRCRAFT,	INTRUDER,	EA-6A	53N
AIRCRAFT,	GREYHOUND,	C-2	57N
ENGINE,	AIRCRAFT,	T-400	76N
CATAPULT/ARRESTING GEAR			82N
AVIATION FUEL SYSTEMS,		JP-5	A9N
COUNTER MEASURE SET,		AN/SLQ-32	AAN
FIRE CONTROL SYSTEM(FCS),		MK-92	AXN
MISSILE, AIR TO AIR,	PHOENIX,	AIM-54	BBN
MISSILE, AIR INTERCEPT,	SIDEWINDER,	AIM-9	BCN
MISSILE, AIR TO AIR,	SPARROW,	AIM-7	BDN
MISSILE, ALL WEAT ANTI-	SHIP, HARPOON,	AGM-84	BEN
AIRCRAFT,		C-2A (REPROCURED)	BPN
HELIO. LANDING SYSTEM,		LAMPS MKIII	BQN
SEAL DELIVERY VEHICLE			HTN
HELICOPTER,		MH-53E	CFN
ENGINE,	AIRCRAFT,	F110-GE-400	CGN
AIRCRAFT,	STRATOFORTRESS,	B-52	04F
AIRCRAFT,	STRATOLIFTER,	C-135	05F
AIRCRAFT,		F-111	10F
AIRCRAFT,	GALAXY,	C-5	11F
AIRCRAFT,	STARLIFTER,	C-141	12F
HELICOPTER,	GREEN GIANT	H-3	15F
HELICOPTER,	SUPER JOLLY	H-53	16F
AIRCRAFT,	EAGLE,	F-15	19F
MISSILE,	MAVERICK,	AGM-65A	20F

Weapon Systems Listing for DLA-PRS Request (Cont'd)

Description	Weapon Name		WSDC
AIRCRAFT,	THUNDERBOLT II,	A-10	24F
AIRCRAFT,	AWACS,	E-3A	25F
AIRCRAFT,		F-16	26F
485L TACS			31F
HELICOPTERS,		UH-60A/HH-60D	75F
COMMUNICATIONS PROGRAM,	COMBAT THEATER (TRI-TAC)	478T	78F
SUPPORT EQUIPMENT,	F-15 AIRCRAFT		82F
SUPPORT EQUIPMENT,	A-10 AIRCRAFT		84F
SUPPORT EQUIPMENT,		C-5 AIRCRAFT	86F
SUPPORT EQUIPMENT,		C-141 AIRCRAFT	87F
SUPPORT EQUIPMENT,	H-53 HELICOPTER		89F
SUPPORT EQUIPMENT,	H-1 HELICOPTER		90F
SUPPORT EQUIPMENT,	H-60 HELICOPTER		91F
SUPPORT EQUIPMENT,	F-16 AIRCRAFT		92F
SUPPORT EQUIPMENT,	F-111 AIRCRAFT		94F
SUPPORT EQUIPMENT,	E-3A AIRCRAFT		95F
SUPPORT EQUIPMENT,	C-135 AIRCRAFT		96F
SUPPORT EQUIPMENT,	C-130 AIRCRAFT		97F
SUPPORT EQUIPMENT,	H-3 HELICOPTER		AAF
SUPPORT EQUIPMENT,	B-52 AIRCRAFT		ABF
AIRCRAFT, SOH	(AC130A, AC130H, MC130H,	EC130E)	ATF
ENGINE,	AIRCRAFT TF33-P-3/5/9	(C/EC-135, B-52H)	AYF
ENGINE,	AIRCRAFT-J57 ALL MODELS	(C-135, EC-135, B-52)	AZF
ENGINE,	AIRCRAFT TF33-100	(F-111A/E)	BBF
ENGINE,	AIRCRAFT TF30-100	(F-111F)	BCF
ENGINE,	AIRCRAFT TF30-P-3/4/7/9	(F-111A/D/E)	BDF
ENGINE,	AIRCRAFT T-56-A-9	(C-130A/D)	BGF
ENGINE,	AIRCRAFT T56-A-7/15	(C-130B/E/H/N/P)	BHF
ENGINE,	AIRCRAFT T64-GE-3/7	(H-53B/C/H, HH-53B)	BNF
ENGINE,	AIRCRAFT TF33-P-7	(C-141A/B)	BQF
ENGINE,	AIRCRAFT TF39-GE-1	(C-5A)	BRF
ENGINE,	AIRCRAFT F100-PW-100	(F-15A/B/C/D)	BTF
ENGINE,	AIRCRAFT F100-PW-200	(F-16A/B/C/D)	BUF
ENGINE,	AIRCRAFT-F110-GE-100	(F-16C/D)	BVF
HIGH SPEED ANTI-RADIATION	MISSILE (HARM)	AGM-88A	CRF
ENGINE,	AIRCRAFT,	F100-PW-220 (F-15)	DLF
AIRCRAFT,	HERCULES	C-130	06F
HELICOPTER, SOF/		HH53H PAVE LOW	DUF
MISSILE,	TOW		12A
HOWITZER,		M-102	25A
HOWITZER,	155 MM,	M-198	35A
TANK,	ABRAMS,	M-1	36A
FIGHTING VEHICLE SYSTEMS,		BRADLEY (BFVS)	37A

Weapon Systems Listing for DLA-PRS Request (Cont'd)

Description	Weapon Name		WSDC
MISSILE,	STINGER		38A
HELICOPTER,	BLACK HAWK,	UH-60A	40A
HELICOPTER,	APACHE,	AH-64	61A
MISSILE,	DRAGON ANTITANK		63A
MISSILE,	HELLFIRE		64A
LASEAR TARGET DESIGNATOR	(LTD) DEVICE,	AN/PAQ-1	66A
RADIO SYSTEM,SINGLE	CHANNEL GROUND & AIRBOUR	NE-V (SINCGARS)	70A
MASK,PROTECTIVE A/C, CHEM	.,BIOLOG.,RADIOLOG.(CBR),	M-24	71A
GAS MASK,		M25 SERIES	81A
NIGHT VISION SET,		AN/TVS-5	ACA
COMMUNICATIONS TERMINAL,	SATELLITE,	AN/TSC-93A	AEA
SQUAD AUTOMATIC WEAPON,	(SAW)		DSA
ALARM CHEMICAL AGENT:	MANPACK,	M8(REPLACES M14&M16)	DUA
COLLECTIVE PROTECTIVE	EQUIPMENT CBR,	M-10	DVA
DECONTAMINATING APPARATUS	,POWER DRIVEN SKID MTD,	M12A1	DWA
HOWITZER,	MEDIUM TOWED, 155MM		EAA
SHELTER SYSTEM,		M51,NBC	ESA
ARMORED COMBAT EARTHMOVER		(M9)	FGA
TRUCK,	TRACTOR	(M911 & M746)	GAA
THERMAL IMAGERY			GGA
FIRE CONTROL SYSTEM/ADVAN	CED ATTACK HELICOPTER	(FCS/AAH64)	GJA
WATER PURIFICATION EQUIPM	EMNT SET, DIATOMITE FILTE	R, 450 GPH	HDA
WATER PURIFICATION EQUIPM	ENT SET, 1500 GPH		HEA
TOW NIGHT SIGHT EQUIPMENT	SET,	AN/UAS-12	LVA
TRUCK, FORKLIFT: GAS 4000	LB. 144 IN.		KSA
CRANE, SHOVEL TRK MTD: 20	T. W/BOOM M20	-M320T2-M20B-M20A(F)	KXA
RIFLE, 5.5 MM,		M16A2	PWA
MACHINE GUN, GRENADE,	40 MM MOD III (HTLD),	MK19	PZA
COLLECTING PROTECTION EQU	IPMENT, NBC SIMPLIFIED	(XM-20)	QVA
MASK CBR PROTECTIVE,		M17 SERIES	QYA
COMMUNICATIONS TERMINAL,	SHF GMF SATELLITE, AN/TSC	-94A(V1 & V2)	RJA
DISTRIBUTOR, WATER 2500 G	AL		RRA
RADIO SET		AN/PRC-104	EDM
DECONTAMINATING APPARATUS	, PD, SKD-MTD, 500 GAL	M12/A1	J3M
TRUCK, FORKLIFT, ROUGH	TERRAIN, 6000 LB (5ID)		MCM
LAUNCHER, TUBULAR,	, F/GM TOW WPN SYS	M220A1	XRM
SECURE VOICE COMMUNICATIO	NS SET		YMM
RADIO TERMINAL, DIGITAL	TROPSCATTER	AN/TRC-170	FWM
WATER PURIFICATION UNIT	- REVERSE OSMOSIS		NBM
LIGHT ARMORED VEHICLE , A	NTI-TANK		VMM
WATER PURIFICATION UNIT	REVERSE OSMOSIS		SFA
DECON APPARATUS, PWR DRVN	LT WT		TMA
MISSILE, AIR TO GROUND	SHRIKE		DFN

APPENDIX B

<u>Weapon Systems Listing for DLA-PRS Request (Cont'd)</u>

<u>Description</u>	<u>Weapon Name</u>		<u>WSDC</u>
MISSILE, AIR TO GROUND	HARM		DGN
MISSILE, AIR TO GROUND	HELLFIRE		DHN
PERSONAL DEFENSE WEAPON	9MM		TQA
SNIPER WEAPON SYSTEM,	M24		TSA
Troop Support	Mask, Chem-Bio	XM42	UBA
Troop Support	Mask, Chem-Bio	XM40	UCA
MINESWEEPING	MINESWEEPING SYSTEMS		DSN
CONTROL SYSTEM	GUN FIRE	MK 38	DYN
DECON APPARATUS	POWER DRIVEN PORTABLE	M17	UNA
RELIABILITY, AVAILABILITY	MAINTAINABILITY	M109 NUC, BIO, CHEM	UJA
ENGINE, AIRCRAFT	(F15E F16 C/D)	F100-PW-229	EUF
ENGINE, AIRCRAFT	T-700		77N

APPENDIX C

Distribution of DLA Funding Requirements

Aviation Systems Command (AVSCOM)

	≤ $50	> $50 ≤ $100	> $100 ≤ $500	> $500 ≤ $1000	> $1000 ≤ $5000	> $5000 ≤ $10,000	> $10,000	Total Lines
DGSC	128	43	154	102	339	133	326	1225
DESC	684	119	343	253	675	187	263	2524
DISC	1760	347	1125	517	1802	550	575	6676
DCSC	162	46	176	154	445	141	220	1344
Total	2734	555	1798	1026	3261	1011	1384	11769
% Req	23.23	4.72	15.28	8.72	27.71	8.59	11.76	100.00

Tank/Automotive Command (TACOM)

	≤ $50	> $50 ≤ $100	> $100 ≤ $500	> $500 ≤ $1000	> $1000 ≤ $5000	> $5000 ≤ $10,000	> $10,000	Total Lines
DGSC	332	67	150	58	271	73	143	1094
DESC	456	74	209	95	298	85	75	1292
DISC	3268	575	1097	381	1317	279	223	7140
DCSC	2168	549	1313	738	1898	529	775	7970
Total	6224	1265	2769	1272	3784	966	1216	17496
% Req	35.57	7.23	15.83	7.27	21.63	5.52	6.95	100.00

Cumulative Data for DLA Overall

	≤ $50	> $50 ≤ $100	> $100 ≤ $500	> $500 ≤ $1000	> $1000 ≤ $5000	> $5000 ≤ $10,000	> $10,000	Total Lines
DGSC	460	110	304	160	610	206	469	2319
DESC	1140	193	552	348	973	272	338	3816
DISC	5028	922	2222	898	3119	829	798	13816
DCSC	2330	595	1489	892	2343	670	995	9314
Total	8958	1820	4567	2298	7045	1977	2600	29265
% Req	30.61	6.22	15.61	7.85	24.07	6.76	8.88	100.00

C-1

APPENDIX D

OCS FUNDING REQUIREMENTS (DLA-OS)

TACOM
MONTH

	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL ANNUAL REQ.
DGSC	1,032,800	331,091	3,197,186	(1,810,578)	3,439,386	(364,436)	1,026,487	323,390	4,171,173	(1,808,302)	2,561,998	(277,368):	11,822,829
DESC	344,580	89,829	625,307	140,603	506,263	144,622	605,850	140,029	461,904	201,819	729,170	148,474 :	4,149,450
DCSC	3,974,256	297,698	6,556,687	4,262,620	1,767,797	272,105	10,091,666	(480,310)	1,966,073	3,965,679	6,304,139	920,074 :	39,898,484
DISC	1,074,144	314,650	2,355,268	8,353	1,922,506	526,547	2,205,584	774,226	1,727,049	155,389	2,595,675	516,045 :	14,173,936
TOTAL	6,425,780	1,043,268	12,735,450	2,601,498	7,635,952	578,838	13,929,587	757,335	8,326,199	2,514,585	12,190,982	1,307,225 :	70,046,699

AVSCOM
MONTH

	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL ANNUAL REQ.
DGSC	3,028,128	1,340,769	8,122,876	(803,851)	6,934,989	519,196	4,029,302	1,214,954	7,025,598	(607,469)	7,625,467	1,589,381 :	40,019,343
DESC	807,789	474,162	1,583,350	637,490	1,422,851	605,310	1,625,215	620,953	1,329,926	827,449	1,954,357	550,454 :	12,439,336
DCSC	1,384,409	558,047	2,206,650	1,211,685	1,139,289	560,044	2,717,138	513,747	1,145,920	1,322,816	2,084,677	784,520 :	15,628,952
DISC	2,507,984	1,195,551	4,468,701	2,136,266	3,144,938	1,740,116	5,465,265	1,715,818	3,187,355	2,183,977	4,755,135	1,610,028 :	34,112,134
TOTAL	7,728,310	3,569,559	16,381,572	3,181,590	12,642,067	3,424,666	13,836,920	4,065,472	12,688,799	3,726,773	16,419,636	4,534,383 :	102,199,765

TOTAL FUNDING FIGURES

	1	2	3	4	5	6	7	8	9	10	11	12	
DGSC	4,060,928	1,671,860	11,320,067	(2,614,429)	10,374,375	154,760	5,055,789	1,538,344	11,196,771	(2,415,771)	10,187,465	1,312,013 :	51,842,172
DESC	1,152,369	574,021	2,209,657	778,093	1,929,114	749,932	2,231,065	760,982	1,791,830	1,029,268	2,683,527	698,928 :	16,588,786
DCSC	5,358,665	855,745	8,763,347	5,474,305	2,907,086	832,149	12,808,804	33,437	3,111,993	5,288,495	8,388,816	1,704,594 :	55,527,436
DISC	3,582,128	1,531,201	6,823,859	2,145,119	5,067,444	2,266,663	7,670,849	2,490,044	4,914,404	2,339,366	7,350,810	2,126,073 :	48,288,070
GRAND TOTAL	14,154,090	4,612,827	29,117,040	5,783,088	20,278,019	4,003,504	27,766,507	4,822,807	21,014,998	6,241,358	28,610,618	5,641,608 :	172,246,464

APPENDIX E

Production Lead Time Data

Number of NSNs

Lead Time Rqmt (Months)	DISC	DESC	DCSC	DGSC
0	12	126	737	3
1	310	270	879	137
2	777	351	924	181
3	931	384	854	209
4	1057	393	820	194
5	1514	282	568	153
6	946	169	263	102
7	796	97	150	70
8	573	43	89	75
9	396	44	87	56
10	237	32	49	45
11	161	6	31	34
12	71	4	20	35
13	37	7	24	12
14	42	8	9	10
15	32	3	10	12
16	20	0	7	15
17	18	2	0	7
18	15	-	3	4
19	15	-	0	2
20	4	-	0	1
21	1	-	0	2
22	3	-	3	2
23	3	-	-	1
24	3	-	-	1
25	1	-	-	-
26	1	-	-	-

Production Lead Time Data

DISC

DGSC

DESC

DCSC
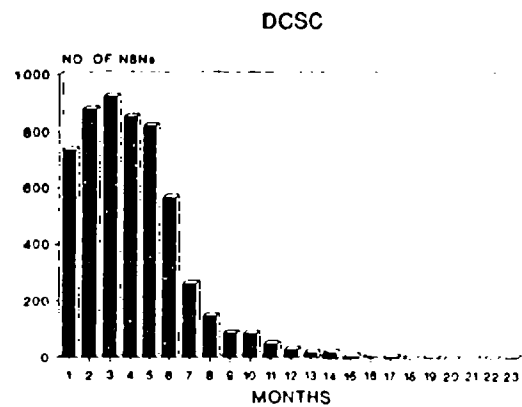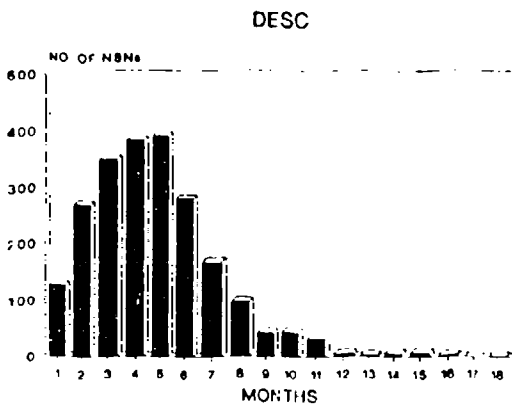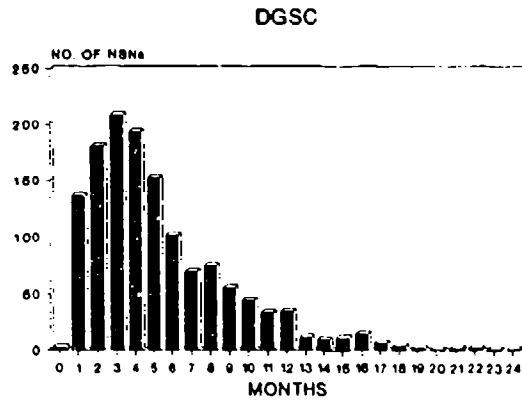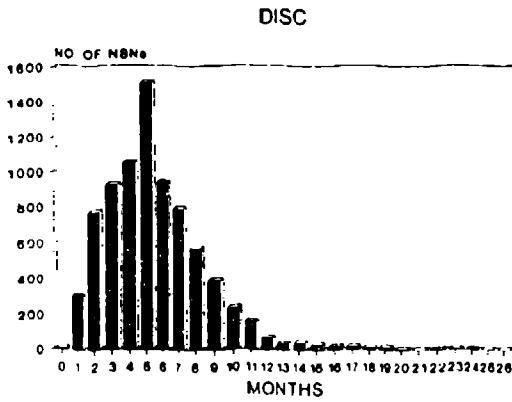
APPENDIX F

Computer Code

DEVELOPMENT OF INPUT DATA BASE

JCL, ERDM, and SAS code used to extract required data from DLA's commodity files. Resulting output file contained required input data to conduct the analysis.

(GOR.MELIUS.JCL(MRI1A)

```
//GOR6015I JOB (6015,GOR),'MELIUS',CLASS-3,MSGCLASS-V,NOTIFY-GOR6015
/*JOBPARM S-GSCi
/*
//SORTWSDC EXEC PGM-IERRC000,PARM-'MSG-AP',REGION-1000K
//SORTLIB   DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT    DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SORTIN    DD DSN=GOR.MELIUS.TACOM,DISP-SHR
//SORTOUT   DD DSN-&&TEMP1,
//          DISP-(NEW,PASS,DELETE),
//          DCB-(RECFM-FB,LRECL-9,BLKSIZE-19062),
//          UNIT-WORKD,
//          SPACE-(CYL,(100,100),RLSE)
//SORTWK01 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02 DD UNIT=WORKD,SPACE-(CYL,(55,55))
//SORTWK03 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK05 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN     DD *
 SORT FIELDS-(1,3,CH,A)
 END
/*
//MKLIST EXEC SAS
//SAS.WORK DD SPACE-(6160,(3000,500),,,ROUND),VOL-SER-GS00DA
//DATAIN DD DSN=GOR.MAR.WPN903.I,DISP-SHR
//OUT1         DD DSN-&&TEMP2,
//          DISP-(NEW,PASS,DELETE),
//          DCB-(RECFM-FB,LRECL-17,BLKSIZE-19057),
//          UNIT-WORKD,
//          SPACE (TRK,(500,750),RLSE)
//SYSIN DD *
DATA WAR;
  INFILE DATAIN;
  INPUT
    @02 NSN $13.
    @15 WSDC $3.
    @121 ESS $1.;
```

```
      FILE OUT1 NOPRINT;
      PUT @01 WSDC $3.
          @04 NSN $13.
          @17 ESS $1.;
/*
//SORTWSD  EXEC PGM-IERRCOOO,PARM-'MSG-AP',REGION-1000K
//SORTLIB  DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT   DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SORTIN   DD DSN-&&TEMP2,DISP-(OLD,DELETE,DELETE)
//SORTOUT  DD DSN-&&TEMP3,
//            DISP-(NEW,PASS,DELETE),
//            DCB-(RECFM-FB,LRECL-17,BLKSIZE-19057),
//            UNIT-WORKD,
//            SPACE-(CYL,(100,100),RLSE)
//SORTWK01 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK03 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK05 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN    DD *
 SORT FIELDS-(1,3,CH,A)
 END
/*
//MATCH1 EXEC PGM-ATJ91U
//SYSABEND DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SYSUT1   DD DSN-&&TEMP1,DISP-(OLD,DELETE,DELETE)
//SYSUT1A  DD DSN-&&TEMP3,DISP-(OLD,DELETE,DELETE)
//SYSUT2   DD DSN-GOR.MELIUS.LST,
//            DCB-(RECFM-FB,LRECL-18,BLKSIZE-19062),
//            UNIT-3350,
//            DISP-(NEW,PASS,DELETE),
//            SPACE-(TRK,(100,200),RLSE)
//SYSIN    DD *
*
    NOREAD
    READ
    READA
*
 L1
    IF EOJ
    IF EOJA
    MOVE SPACE TO 1,100
    EDIT H10,9 TO H40,BZZZ,ZZZ,Z99
    STRING 'NO. OF MATCHED NSNS: '  H40,12
    P R1,80
```

```
                EDIT H20,9 TO H50,BZZZ,ZZZ,Z99
                STRING 'NO. OF WSDC WITH MATCHED NSNS:' H50,12
                P R1,80 EOJ
                ENDIF
        *
                1F EOJ
                  READA
                  GO 1
                ENDIF
        *
                IF EOJA
                  ADD 1 TO H20,9
                  READ
                  GO 1
                ENDIF
        *
                IF N1,3 EQ A1,3 DO 2 GO 1 ENDIF
        *
                IF N1,3 LT A1,3
                  ADD 1 TC H20,9
                  READ
                  GO 1
                ENDIF
        *
                IF N1,3 GT A1,3
                  READA
                ENDIF
                GO 1
        *
         D2
                ADD 1 TO H10,9
                MOVE A4,14 TO R1,14
                MOVE N5,4 TO R15,4
                W2
                READA
                EXIT
        /*
        //SORT3     EXEC PGM=IERRC000,PARM='',SG=AP',REGION=1000K
        //SORTLIB   DD DSN-SYS1.SORTLIB,DISP=SHR
        //SYSOUT    DD SYSOUT=*
        //SYSPRINT  DD SYSOUT=*
        //SORTIN    DD DSN-GOR.MELIUS.LST,DISP=(OLD,DELETE,DELETE)
        //SORTOUT   DD DSN=&&TEMP4,
        //          DISP=(NEW,PASS,DELETE),
        //          DCB=(RECFM=FB,LRECL=18,BLKSIZ=19062),
        //          UNIT-WORKD,
        //          SPACE=(CYL,(100,100),RLSE)
```

```
//SORTWK01 DD  UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02 DD  UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK03 DD  UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04 DD  UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK05 DD  UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN    DD *
 SORT FIELDS-(1,13,CH,A)
 END
/*
//IDESS   EXEC PGM-ATJ91U
//SYSABEND DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SYSUT1   DD DSN-&&TEMP4,DISP-(OLD,DELETE,DELETE)
//SYSUT2   DD DSN-&&TEMP5,
//           DCB-(RECFM-FB,LRECL-21,BLKSIZE-19068),
//           UNIT-3350,
//           DISP-(NEW,PASS,DELETE),
//           SPACE-(TRK,(100,200),RLSE)
//SYSIN    DD *
*
    NOREAD
    READ
  L1
    IF EOJ EOJ ENDIF
    ADD 1 TO H40,3
    MOVE N1,18 TO R1,18
    READ
*
    IF N1,13 EQ R1,13 DO 2 GO 1 ENDIF
*
    IF N1,13 NE R1,13
     MOVE H40,3 TO R19,3
     W2
     MOVE ZEROS TO H40,3
    ENDIF
    GO 1
*
  D2
  L2
    IF N14,1 LT R14,1
      MOVE N14,1 TO R14,1
      ADD 1 TO H40,3
    ENDIF
    IF N15,4 GT R15,4
      MOVE N15,4 TO R15,4
    ENDIF
    READ
```

```
*
      IF N1,13 EQ R1,13 GO 2 ENDIF
      MOVE H40,3 TO R19,3
      W2
      MOVE ZEROS TO H40,3
      EXIT
/*
//SORT4     EXEC PGM-IERRCO00,PARM-'MSG-AP',REGION-1000K
//SORTLIB   DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT    DD SYSOUT-*
//SYSPRINT  DD SYSOUT-*
//SORTIN    DD DSN-&&TEMP5,DISP-(OLD,DELETE,DELETE)
//SORTOUT   DD DSN-&&TEMP5A,
//          DISP-(NEW,PASS,DELETE),
//          DCB-(RECFM-FB,IRECL-21,BLKSIZE-19068),
//          UNIT-WORKD,
//          SPACE-(CYL,(100,100),RLSE)
//SORTWK01  DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02  DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK03  DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04  DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK05  DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN     DD *
 SORT FIELDS-(1,13,CH,A)
 END
/*
//ADDATA EXEC SAS
//SAS.WORK DD SPACE-(6160,(3000,500),,,ROUND),VOL-SER-GS00DA
//DATAIN DD DSN-GOR.DADS.ITEM904I,DISP-SHR
//OUT1          DD DSN-&&TEMP6,
//              DISP-(NEW,PASS,DELETE),
//              DCB-(RECFM-FB,LRECL-100,BLKSIZE-19000),
//              UNIT-TAPE
//SYSIN DD *
DATA WAR;
  INFILE DATAIN;
  INPUT
    @02 NSN $13.
    @25 NAME $19.
    @46 UIC $2.
    @48 SSC $1.
    @55 UPRICE 9.
    @82 ICC $1.
    @98 PLT 3.
    @104 PCM 3.
    @135 BO 9.
    @144 DUEIN 9.
```

```
         @153 OH 9.
         @180 OBJQTY 9.
         @189 QFD 9.
         @198 ROP 7.
         @232 AD 9.;

         IF SSC^='2' OR SSC^='3' OR SSC^='9' OR SSC^='0' OR SSC^=' ';
         IF ICC='1' OR ICC='P' THEN OBJQTY=ROP+(PCM/3)*QFD;

         FILE OUT1 NOPRINT;
         PUT @01 NSN $13.
             @14 NAME $19.
             @33 UIC $2.
             @35 UPRICE Z9.
             @44 PLT Z3.
             @47 BO Z9.
             @56 DUEIN Z9.
             @65 OH Z9.
             @74 OBJQTY Z9.
             @83 ROP Z7.
             @90 AD Z9.
             @99 ICC $1.
             @100 SSC $1.;
/*
//SORT5     EXEC PGM=IERRCO00,PARM='MSG=AP',REGION=1000K
//SORTLIB   DD DSN=SYS1.SORTLIB,DISP=SHR
//SYSOUT    DD SYSOUT=*
//SYSPRINT  DD SYSOUT=*
//SORTIN    DD DSN=&&TEMP6,DISP=(OLD,DELETE,DELETE)
//SORTOUT   DD DSN=&&TEMP7,
//          DISP=(NEW,PASS,DELETE),
//          DCB=(RECFM=FB,LRECL=100,BLKSIZE=19000),
//          UNIT=WORKD,
//          SPACE=(CYL,(200,400),RLSE)
//SORTWK01 DD UNIT=WORKD,SPACE=(CYL,(25,25))
//SORTWK02 DD UNIT=WORKD,SPACE=(CYL,(25,25))
//SORTWK03 DD UNIT=WORKD,SPACE=(CYL,(25,25))
//SORTWK04 DD UNIT=WORKD,SPACE=(CYL,(25,25))
//SORTWK05 DD UNIT=WORKD,SPACE=(CYL,(25,25))
//SYSIN     DD *
 SORT FIELDS=(1,13,CH,A)
 END
/*
//MATCH2 EXEC PGM=ATJ91U
//SYSABEND DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSUT1    DD DSN=&&TEMP5A,DISP=(OLD,DELETE,DELETE)
```

```
//SYSUT1A   DD DSN=&&TEMP7,DISP=(OLD,DELETE,DELETE)
//SYSUT2    DD DSN=&&TEMP8,
//          DCB=(RECFM=FB,LRECL=108,BLKSIZE=19008),
//          UNIT=3350,
//          DISP=(NEW,PASS,DELETE),
//          SPACE=(TRK,(700,800),RLSE)
//SYSIN     DD *
*
    NOREAD
    READ
    READA
*
 L1
    IF EOJ
    IF EOJA
     MOVE SPACE TO 1,100
     EDIT H10,9 TO H40,BZZZ,ZZZ,Z99
     STRING 'NO. OF MATCHED NSNS: '  H40,12
     P R1,80
     EDIT H20,9 TO H50,BZZZ,ZZZ,Z99
     STRING 'NO. OF NSNS WITH NO MATCH TO ITEM FILE:' H50,12
     P R1,80 EOJ
    ENDIF
*
    IF EOJ
      READA
      GO 1
    ENDIF
*
    IF EOJA
      ADD 1 TO H20,9
      READ
      GO 1
    ENDIF
*
    IF N1,13 EQ A1,13 DO 2 GO 1 ENDIF
*
    IF N1,13 LT A1,13
      ADD 1 TO H20,9
      READ
      GO 1
    ENDIF
*
    IF N1,13 GT A1,13
     READA
    ENDIF
    GO 1
```

```
*
 D2
    ADD 1 TO H10,9
    MOVE A1,100 TO R1,100
    MOVE N14,8 TO R101,8
    W2
    READ
    READA
    EXIT
/*
//SORT6     EXEC PGM-IERRCO00,PARM-'MSG-AP',REGION-1000K
//SORTLIB   DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT    DD SYSOUT-*
//SYSPRINT  DD SYSOUT-*
//SORTIN    DD DSN-&&TEMP8,DISP-(OLD,DELETE,DELETE)
//SORTOUT   DD DSN-&&TEMP9,
//          DISP-(NEW,PASS,DELETE),
//          DCB-(RECFM-FB,LRECL-108,BLKSIZE-19008),
//          UNIT-WORKD,
//          SPACE-(CYL,(100,100),RLSE)
//SORTWKO1 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWKO2 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWKO3 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWKO4 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWKO5 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN     DD *
 SORT FIELDS-(1,13,CH,A)
 END
/*
//IDEMO  EXEC PGM-ATJ91U
//SYSABEND DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SYSUT1    DD DSN-GOR.DEMD904.I,DISP-SHR
//SYSUT2    DD DSN-&&TEMP10,
//          DCB-(RECFM-FB,LRECL-19,BLKSIZE-19057),
//          UNIT-3350,
//          DISP-(NEW,PASS,DELETE),
//          SPACE-(TRK,(100,200),RLSE)
//SYSIN     DD *
*
    NOREAD
 L2
    READ
    IF EOJ EOJ ENDIF
    IF N26,1 NE '1' GO 2 ENDIF
    IF N27,1 EQ 'T' GO 2 ENDIF
      MOVE N3,13 TO R1,13
      MOVE N32,6 TO R14,6
```

F-9

```
                ADD N42,6 TO R14,6
                ADD N52,6 TO R14,6
                ADD N62,6 TO R14,6
             ENDIF
     I 1
             IF EOJ EOJ ENDIF
             ADD 1 TO H40,3
             READ
             IF N26,1 NE '1' GO 1 ENDIF
             IF N27,1 EQ 'T' GO 1 ENDIF
     *
             IF N3,13 EQ R1,13
                ADD N32,6 TO R14,6
                ADD N42,6 TO R14,6
                ADD N52,6 TO R14,6
                ADD N62,6 TO R14,6
                GO 1
             ENDIF
     *
             IF N3,13 NE R1,13
              W2
                MOVE N3,13 TO R1,13
                MOVE N32,6 TO R14,6
                ADD N42,6 TO R14,6
                ADD N52,6 TO R14,6
                ADD N62,6 TO R14,6
             ENDIF
             GO 1
     /*
     //MATCH5 EXEC PGM-ATJ91U
     //SYSABEND DD SYSOUT-*
     //SYSPRINT DD SYSOUT-*
     //SYSUT1    DD DSN-&&TEMP9,DISP-(OLD,DELETE,DELETE)
     //SYSUT1A   DD DSN-&&TEMP10,DISP-(OLD,DELETE,DELETE)
     //SYSUT2    DD DSN-GOR.MELIUS.TADATI,
     //          DCB-(RECFM-FB,LRECL-117,BLKSIZE-18954),
     //          UNIT-3350,
     //          VOL-SER-DOROG2,
     //          DISP-(NEW,CATLG,DELETE),
     //          SPACE-(TRK,(900,950),RLSE)
     //SYSIN    DD *
     *
         NOREAD
         READ
         READA
```

```
*
  L1
    IF ECJ
    IF EOJA
     MOVE SPACE TO 1,100
     EDIT H10,9 TO H40,BZZZ,ZZZ,Z99
     STRING 'NO. OF MATCHED NSNS: '  H40,12
     P R1,80
     EDIT H20,9 TO H50,BZZZ,ZZZ,Z99
     STRING 'NO. OF NSNS WITH NO MATCH FROM DATA:' H50,12
     P R1,80
     EDIT H30,9 TO H60,BZZZ,ZZZ,Z99
     STRING 'NO. OF NSNS WITH NO MATCH TO WAR FILE:' H60,12
     P R1,80 EOJ
    ENDIF
*
    IF EOJ
      ADD 1 TO H30,9
      READA
      GO 1
    ENDIF
*
    IF EOJA
      ADD 1 TO H20,9
      READ
      GO 1
    ENDIF
*
    IF N1,13 EQ A1,13 DO 2 GO 1 ENDIF
*
    IF N1,13 LT A1,13
      ADD 1 TO H20,9
*     MOVE N1,110 TO R1,110
*     MOVE ZEROS TO R111,48
*     W2
      READ
      GO 1
    ENDIF
*
    IF N1,13 GT A1,13
      ADD 1 TO H30,9
      READA
    ENDIF
    GO 1
*
  D2
    ADD 1 TO H10,9
    MOVE N1,108 TO R1,108
```

F-11

```
MOVE A14,6 TO R109,6
W2
READ
READA
EXIT
/*
```

EXTRACTION OF DUE-IN DATA

Computer Code used to extact due-in data from DLA's contract
files (GOR.ALLACF.X) from each Inventory Cont.ol Point (ICP).
Program was written in both SAS (used to extract data) and ERDM
(used to sort data by NSN, then by due-in date).

(COR.MELIUS.JCL(MRICON)

```
//GOR6015U JOB (6015,GOR),'MELIUS',CLASS-3,MSGCLASS-V,NOTIFY-GOR6015
/*JOBPARM S-GSCl
/*
//MKLIST EXEC SAS
//DATAIN DD DSN-GOR.DADS.ALLACF.G,DISP-SHR
//OUT1        DD DSN-&&TEMP1,
//            DISP-(NEW,PASS,DELETE),
//            DCB-(RECFM-FB,LRECL-27,BLKSIZE-19062),
//            UNIT-WORKD,
//            SPACE-(TRK,(400,650),RLSE)
//SYSIN DD *
DATA WAR;
  INFILE DATAIN;
  INPUT
    @64 NSN $15.
    @79 CODE 1.
    @49 QTY PD5.
    @145 DTD PD3.;

    IF CODE - ' ';
    IF DTD > '90273';
    IF DTD < '91273';

    FILE OUT1 NOPRINT;
    PUT @01 NSN $13.
        @14 DTD Z5.
        @19 QTY Z9.;
/*
//SORTNSN   EXEC PGM-IERRC0O0,PARM-'MSG-AP',REGION-1000K
//SORTLIB   DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT    DD SYSOUT-*
;//SYSPRINT DD SYSOUT-*
//SORTIN    DD DSN-&&TEMP1,DISP-(OLD,DELETE,DELETE)
//SORTOUT   DD DSN-GOR.MELIUS.MRIPG,
//          DISP-(NEW,CATLG,DELETE),
//          DCB-(RECFM-FB,LRECL-27,BLKSIZE-19062),
//          UNIT-3350,
```

```
//          VOL-SER-DOROG2,
//          SPACE-(CYL,(25,50),RLSE)
//SORTWK01 DD UNIT-WORKD,SPACE-(CYL,(15,15))
//SORTWK02 DD UNIT-WORKD,SPACE-(CYL,(15,15))
//SORTWK03 DD UNIT-WORKD,SPACE-(CYL,(15,15))
//SORTWK04 DD UNIT-WORKD,SPACE-(CYL,(15,15))
//SORTWK05 DD UNIT-WORKD,SPACE-(CYL,(15,15))
//SYSIN    DD *
 SORT FIELDS-(1,13,CH,A,14,5,CH,A)
 END
/*
```

Call Main Program and Screen Funding Requirements

Computer code that calls main FORTRAN (GOR.MELIUS.JCL(MRI1) program and screens resulting data for total funding requirements.

(GOR.MELIUS.JCL(MRITC4)

```
//GOR60151 JOB (6015,GOR),'MELIUS',MSGCLASS-V,CLASS-1,NOTIFY-GOR6015
//*TYPRUN-SCAN
/*JOBPARM S-GSC1
//****************************************************************
//*                                                              *
//*      THIS PROGRAM RUNS THE MRI INVENTORY POSITION PROGRAM    *
//*                                                              *
//****************************************************************
//*
//*
//****************************************************************
//*                                                              *
//* JCL:  GOR.MELIUS.JCL(MRI)                                    *
//* COMPUTES INDICATOR VALUES AND WRITES OUT A FILE              *
//*                                                              *
//****************************************************************
//*
//INVPS EXEC FORTVCG,
//          PARM-'NODECK,NOLIST,NOTF,OPT(0),SOURCE,NOSRCFLG'
//FORT.SYSIN DD DSN-GOR.MELIUS.JCL(MRI1),DISP-SHR
//GO.FT02F001 DD DSN-GOR.MELIUS.AVDATI,DISP-SHR
//GO.FT03F001 DD DSN-GOR.MELIUS.MRIPI,DISP-SHR
//GO.FT06F001 DD SYSOUT-*
//GO.FT08F001 DD DSN-GOR.MELIUS.TT,
//      DISP-(NEW,PASS,DELETE),
//      DCB-(LRECL-392,BLKSIZE-18816,RECFM-FB),
//      UNIT-WORKD,
//      SPACE-(TRK,(400,600),RLSE)
//SYSOUT DD SYSOUT-*
//SYS.RINT DD SYSOUT-*
//SYSDUMP DD SYSOUT-*
/*
//SCREEN    EXEC PGM-ATJ91U
//SYSABEND DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SYSUT1    DD DSN-GOR.MELIUS.TT,DISP-(OLD,DELETE,DELETE)
//SYSUT2    DD DSN-&&TEMP7,
//          DISP-(NEW,PASS,DELETE),
```

```
//            DCB-(LRECL-392,BLKSIZE-18816,RECFM-FB),
//            UNIT-WORKD,
//            SPACE-(TRK,(400,500),RLSE)
//SYSIN     DD *
*
    NOREAD
    READ
 1.1
    IF EOJ
       MOVE SPACE TO 1,100
       EDIT H10,9 TO H20,BZZZ,ZZZ,Z99
       STRING 'NO. OF ITEMS:' H20,12
       P R1,80 EOJ
    ENDIF
*
    IF N377,12 NE '        0.00' ADD 1 TO H10,9 W2D READ GO 1 ENDIF
/*
//SORTF    EXEC PGM-1ERRC000,PARM-'MSG-AP',REGION-1000K
//SORTLIB  DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT   DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SORTIN   DD DSN-&&TEMP7,DISP-(OLD,DELETE,DELETE)
//SORTOUT  DD DSN-GOR.MELIUS.AVCRPT.TSI,
//         DISP-(OLD,KEEP,DELETE),
//         DCB-(LRECL-392,BLKSIZE-18816,RECFM-FB),
//         UNIT-3350,
//         VOL-SER-DOR0G2,
//         SPACE-(TRK,(200,300),RLSE)
//SORTWK01 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK03 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK05 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN    DD *
 SORT FIELDS-(33,8,CH,A,79,3,CH,D)
 END
/*
```

CALCULATION OF INVENTORY REQUIREMENTS

FORTRAN code which was written to calculate inventory positions and procurement requirements.

(GOR.MELIUS.JCL(MRI1))

```
C ************************************************************************
C *            *** MINI MOBILIZATION STATUS MODEL  ***                 *
C *                                                                    *
C *   THIS MODEL INVENTORY POSITION INFORMATION AND PROCURMENT         *
C *   STRATEGIES FOR IDENTIFIED MOBILIZATION ITEMS                     *
C *                                                                    *
C ************************************************************************
C
C  GOR.MELIUS.JCL(MRI)
C
C  PROGRAM VARIABLES
C
C  CDATE - CURRENT DATE (JULIAN)
C  PQTY  - PURCHASE QUANTITY
C  PDATE - DATE TO PURCHASE ITEMS (JULIAN)
C  DIDATE- DATE THAT QTY IS DUE IN (JULIAN)
C  DOQTY - DUE OUT QUANTITY
C  DIQTY(6) -DUE IN QUNTITY
C  INFILE - MRI RAW DATA FILE
C  OTFILE - OUTPUT FILE
C
       INTEGER INFILE,COFILE,OTFILE
C
       DATA INFILE/2/
       DATA COFILE/3/
       DATA OTFILE/8/
       REAL TCOST,OFILE,MTCST(7)
       TCOST=0.00
       DO 60 I=1,7
         MTCST(I)=0.00
    60 CONTINUE
C
C     READ IN MRI DATA FILE
C
       OPEN(INFILE,STATUS='OLD')
       OPEN(COFILE,STATUS='OLD')
       OPEN(OTFILE,STATUS='NEW')
       CALL COMPUT(INFILE,COFILE,OTFILE,TCOST,MTCST)
       WRITE(OTFILE,410)
   410 FORMAT(10X)
```

```
            WRITE(OTFILE,400) MTCST(1),MTCST(2),MTCST(3),MTCST(4),MTCST(5),
          + MTCST(6),MTCST(7),TCOST
      400 FORMAT(54X,F14.2,15X,F11.2,16X,F10.2,17X,F10.2,17X,F10.2,17X,
          + F10.2,17X,F10.2,F15.2)
            CLOSE(INFILE)
            CLOSE(COFILE)
            CLOSE(OTFILE)
            STOP
            END
C
            SUBROUTINE COMPUT(INFILE,COFILE,OTFILE,TCOST,MTCST)
C
C     INITIALIZE FIELD NAMES
C
            CHARACTER NSN*13,NAME*19
            REAL RCOST(7),SURCH,READI,SCOST,TCOST,MTCST(7)
            INTEGER PRICE,BO,DI,OH,QFD,CDATE,LDT,INFILE,OTFILE,COFILE
            INTEGER DDATE,PDATE(7),ALT,PLT,OBJQTY,REQ(7),BALC,DQTY(37)
            INTEGER MFD,RQTY(7),DUEOUT,BAL(7),ROP,JDATE,CQTY,OWRMR
            INTEGER REQ1,REQ2,REQ3,REQ4,REQ5,REQ6,DOIT
C
C     READ IN ITEM DATA
C
            DOIT-1
          1 READ(INFILE,100,END-99) NSN,NAME,PRICE,ALT,PLT,BO,
          + DI,OH,OBJQTY,QFD,ROP,OWRMR,REQ1,REQ2,REQ3,REQ4,REQ5,REQ6
      100 FORMAT(A13,A19,I9,I3,I3,I9,I9,I9,I9,I9,I7,I9,I8,I8,I8,I8,I8,I8)
C
C     INITIALIZE INPUT DATA
C
            LDT-PLT
            MFD-NINT(QFD*.333334)
C           DUEOUT-BO
            REQ(1)-0
            REQ(2)-(REQ1*.25)+.5
            REQ(3)-(REQ2*.25)+.5
            REQ(4)-(REQ3*.25)+.5
            REQ(5)-(REQ4*.25)+ 5
            REQ(6)-(REQ5*.25)+.5
            REQ(7)-(REQ6*.25)+.5
            BALC-OH-BO
            SURCH-.852
            IF(OWRMR.GT.0) THEN
              READI-OH/(OWRMR*.25)
            ELSE
              READI-1.000
            ENDIF
```

```fortran
C     DO 80 N-1,7
C        RCOST(N)-00000.00
C        RQTY(N)-0
C  80 CONTINUE
C

      CALL CONTR(COFILE,NSN,DQTY,DOIT)
      DOIT-0
C
      CALL INVPOS(BALC,MFD,ROP,OBJQTY,REQ,DQTY,RQTY,
     + RCOST,PDATE,LDT,BAL,PRICE,SURCH,SCOST,TCOST)
C
C     SUM UP ITEM COST
      DO 90 O-1,7,1
         MTCST(O)-MTCST(O)+RCOST(O)
   90 CONTINUE
      TCOST-TCOST+SCOST
C
C
C     WRITE OUTPUT RECORD
C
      WRITE(OTFILE,200) NSN,NAME,READI,BAL(1),RQTY(1),RCOST(1),
     + PDATE(1),BAL(2),RQTY(2),RCOST(2),PDATE(2),BAL(3),RQTY(3),
     + RCOST(3),PDATE(3),BAL(4),RQTY(4),RCOST(4),PDATE(4),BAL(5),
     + RQTY(5),RCOST(5),PDATE(5),BAL(6),RQTY(6),RCOST(6),PDATE(6),
     + BAL(7),RQTY(7),RCOST(7),PDATE(7),SCOST
  200 FORMAT(A13,A19,F8.3,I9,I9,F10.2,I3,I8,I7,F8.2,I3,I8,I7,F8.2,
     + I3,I9,I7,F8.2,I3,I9,I7,F8.2,I3,I9,I7,F8.2,I3,I9,I7,F8.2,I3,F12.2
C
C PROCESS NEXT ITEM
C
C     DO 70 N-1,7
C        RCOST(N)-0.00
C  70 CONTINUE
C
      GOTO 1
   99 RETURN
      END
C
      SUBROUTINE INVPOS(BALC,MFD,ROP,OBJQTY,REQ,DQTY,RQTY,
     + RCOST,PDATE,LDT,BAL,PRICE,SURCH,SCOST,TCOST)
C
      REAL RCOST(7),SURCH,SCOST,TCOST
      INTEGER DUIN,PDTD,JDATE,BAL(7),RQTY(7),DQTY(37),LDT,MFD,ROP
      INTEGER OBJQTY,REQ(7),DUEOUT,BALC,PDATE(7),PRICE
C
C     DUIN-0
      SCOST-0.00
```

```
          PDTD=0
          JDATE=(LDT/30)
          DO 60 M=1,7
            BAL(M)=0
            RQTY(M)=0
            RCOST(M)=0.00
    60    CONTINUE
C
          DO 30 J=1,7
C
          DUIN=0
          DUEOUT=0
C
          DO 40 K=(J+1),27
            DUIN=DUIN+DQTY(K)
    40    CONTINUE
C
          DUEOUT=REQ(J)+MFD
          BAL(J)=BALC+DUIN-DUEOUT+DQTY(J)
          BALC=BAL(J)
C
          IF(BALC.LT.ROP) THEN
              RQTY(J)=OBJQTY-BALC
              IF(RQTY(J).LT.0) RQTY(J)=-(RQTY(J))
              RCOST(J)=RQTY(J)*((PRICE/100.0)*SURCH)
              PDATE(J)=J-JDATE
C             IF(PDATE(J).LT.0) THEN
C                PDTD=JDATE
C                RCOST(1)=RCOST(1)+RCOST(J)
C                RQTY(1)=RQTY(1)+RQTY(J)
C                IF(J.GT.1) THEN
C                    RQTY(J)=0
C                    RCOST(J)=0.00
C                ENDIF
C             ELSE
                 PDTD=JDATE
C             ENDIF
              DQTY(J+PDTD)=DQTY(J+PDTD)+RQTY(J)
          ELSE
              RQTY(J)=0
              RCOST(J)=0.00
              PDATE(J)=0
          ENDIF
    30    CONTINUE
C
          DO 50 L=1,7
            SCOST=SCOST+RCOST(L)
    50    CONTINUE
```

```
C
C    CALCULATE TOTAL COST
C
C
      RETURN
      END
C
C  SUBROUTINE TO IDENTIFY MONTHLY DUE-INS
C
      SUBROUTINE CONTR(COFILE,NSN,DQTY,IREAD)
C
      CHARACTER CNSN*13,NSN*13
      INTEGER CDATE,DTD,CQTY,COFILE,DQTY(37)
C
      DO 20 I=1,27
        DQTY(I)=0
   20 CONTINUE
C
    2 IF(IREAD.EQ.1)READ(COFILE,300,END=99) CNSN,DTD,CQTY
  300 FORMAT(A13,I5,I9)
      IREAD=1
      CDATE=90234
C
      IF (CNSN.LT.NSN) GOTO 2
      IF (CNSN.EQ.NSN) THEN
           DO 30 J=1,7
             IF (DTD.LT.CDATE) THEN
                DQTY(J)=DQTY(J)+CQTY
                GOTO 2
             ELSE
                CDATE=CDATE+30
             ENDIF
           IF (CDATE.GE.90365) CDATE=(91000+(CDATE-90365))
   30      CONTINUE
      ELSE
           GOTO 99
      ENDIF
      GOTO 2
   99 RETURN
      END
```

PROCESSING OF NET REQUIREMENTS
(Used in DLA-OS's Request)

Computer Code used for sorting initial output files, calling the
FORTRAN program (GOR.MELIUS.JCL(DELTA1) which calculates the NET
requirements and screens resulting output file for NSNs that had
no funding requiremernts.

<div align="center">(GOR.MELIUS.JCL(MRIDELTA))</div>

```
//GOR6015G JOB (6015,GOR),'MELIUS',MSGCLASS-V,CLASS-1,NOTIFY-GOR6015
//*TYPRUN-SCAN
/*JOBPARM S-GSC1
/*
//SORT1    EXEC PGM-IERRCOOO,PARM-'MSG-AP',REGION-1000K
//SORTLIB                   DD          DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT   DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SORTIN   DD DSN-GOR.MELIUS.AVCRPT.TSG,DISP-SHR
//SORTOUT  DD DSN-&&TEMP1,
//         DISP-(NEW,PASS,DELETE),
//         DCB-(LRECL-388,BLKSIZE-19012,RECFM-FB),
//         UNIT-WORKD,
//         SPACE-(TRK,(200,300),RLSE)
//SORTWK01 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK03 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK05 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN    DD *
 SORT FIELDS-(1,13,CH,A)
 END
/*
//SORT2    EXEC PGM-IERRCOOO,PARM-'MSG-AP',REGION-1000K
//SORTLIB  DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT   DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SORTIN   DD DSN-GOR.MELIUS.AVCRPT.TG,DISP-SHR
//SORTOUT  DD DSN-&&TEMP2,
//         DISP-(NEW,PASS,DELETE),
//         DCB-(LRECL-388,BLKSIZE-19012,RECFM-FB),
//         UNIT-WORKD,
//         SPACE-(TRK,(200,300),RLSE)
//SORTWK01 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK03 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04 DD UNIT-WORKD,SPACE-(CYL,(55,55))
```

```
//SORTWK05 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN    DD *
 SORT FIELDS-(1,13,CH,A)
 END
/*
//MATCH     EXEC FORTVCG,
//             PARM-'NODECK,NOLIST,NOTF,OPT(0),SOURCE,NOSRCFLG'
//FORT.SYSIN DD DSN-GOR.MELIUS.JCL(DELTA1),DISP-SHR
//GO.FT02F001   DD DSN-&&TEMP1,DISP-(OLD,DELETE,DELETE)
//GO.FT03F001   DD DSN-&&TEMP2,DISP-(OLD,DELETE,DELETE)
//GO.FT06F001   DD SYSOUT-*
//GO.FT08F001   DD DSN-&&TEMP3,
//           DISP-(NEW,PASS,DELETE),
//           DCB-(LRECL-388,BLKSIZE-19012,RECFM-FB),
//           UNIT-WORKD,
//           SPACE-(TRK,(700,800),RLSE)
//SYSOUT  DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
//SYSDUMP  DD SYSOUT-*
/*
//SCREEN   EXEC PGM-ATJ91U
//SYSABEND    DD SYSOUT-*
//SYSPRINT    DD SYSOUT-*
//SYSUT1      DD DSN-&&TEMP3,DISP-(OLD,DELETE,DELETE)
//SYSUT2      DD DSN-&&TEMP4,
//            DISP-(NEW,PASS,DELETE),
//            DCB-(LRECL-388,BLKSIZE-19012,RECFM-FB),
//            UNIT-WORKD,
//            SPACE-(TRK,(400,500),RLSE)
//SYSIN       DD *
*
    NOREAD
    READ
  L1
    IF EOJ
      MOVE SPACE TO 1,100
      EDIT H10,9 TO H20,BZZZ,ZZZ,Z99
      STRING 'NO. OF ITEMS: ' H20,12
      P R1,80 EOJ
    ENDIF
*
    IF N377,12 NE '        0.00' ADD 1 TO H10,9 W2D READ GO 1 ENDIF
/*
//SORTF    EXEC PGM-IERRC000,PARM-'MSG-AP',REGION-1000K
//SORTLIB  DD DSN-SYS1.SORTLIB,DISP-SHR
//SYSOUT   DD SYSOUT-*
//SYSPRINT DD SYSOUT-*
```

```
//SORTIN    DD DSN-&&TEMP4,DISP-(OLD,DELETE,DELETE)
//SORTOUT   DD DSN-GOR.MELIUS.AVCRPT.DG,
//          DISP-(NEW,CATLG,DELETE),
//          DCB-(LRECL-388,BLKSIZE-19012,RECFM-FB),
//          UNIT-3350,
//          VOL-SER-DOROG2,
//          SPACE-(TRK,(200,300),RLSE)
//SORTWK01 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK02 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK03 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK04 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SORTWK05 DD UNIT-WORKD,SPACE-(CYL,(55,55))
//SYSIN     DD *
 SORT FIELDS-(33,8,CH,A,79,3,CH,D)
 END
/*
/*
```

CALCULATION OF NET ODS REQUIREMENTS

Computer code used to calculate the net ODS requirements (written in FORTRAN).
This program is called by (GOR.MELIUS.JCL(MRIDELTA).

(GOR.MELIUS.JCL(DELTA1))

```
C ********************************************************************
C *            ***  MINI MOBILIZATION STATUS MODEL  ***             *
C *                                                                 *
C *    THIS MODEL HAS BEEN MODIFIED TO ANSWER DLA-)'S FUNDING       *
C *    QUESTION FOR ARMY SYSTEMS IN DESERT SHIELD.                  *
C *                                                                 *
C ********************************************************************
C
C  GOR.MELIUS.JCL(MRI)
C
C  PROGRAM VARIABLES
C
C  INFILE - NORMAL PLUS ARMY DEMAND FILE
C  COFILE - NORMAL DEMAND FILE
C  OTFILE - OUTPUT FILE
C
C
C
C    DECLARE FIELD NAMES
C
       CHARACTER NSN*13,NAME*19,UIC*2,ICC,SSC,ESS,NS1*13,NAM1*19
       CHARACTER ES1,IC1,SS1
       REAL FAC1,SCOS1,READ1
       INTEGER PDAT1(12),CN1
       REAL RCOST(12),RCOS1(12),READI,SCOST,TCOST,MTCST(12),TCOST1
       INTEGER PRICE,BO,DI,OH,MFD,CDATE,LDT,INFILE,OTFILE,COFILE
       INTEGER DDATE,PDATE(12),BA1(12),CHK,CH1
       INTEGER RQTY(12),RQT1(12),BAL(12)
C
        DATA INFILE/2/
        DATA COFILE/3/
        DATA OTFILE/8/
C
C     OPEN DATA FILES
C
        OPEN(INFILE,STATUS='OLD')
        OPEN(COFILE,STATUS='OLD')
```

```
         OPEN(OTFILE,STATUS-'NEW')
         CALL TOTPUT(INFILE,COFILE,OTFILE)
         WRITE(OTFILE,410)
   410   FORMAT(10X)
         READ(INFILE,400)
         READ(COFILE,400)
   400   FORMAT(254X)
C
         READ(COFILE,200,END-100) NS1,NAM1,READ1,ES1,CN1,IC1,SS1,FAC1,
        + BA1(1),RQT1(1),RCOS1(1),
        + PDAT1(1),BA1(2),RQT1(2),RCOS1(2),PDAT1(2),BA1(3),RQT1(3),
        + RCOS1(3),PDAT1(3),BA1(4),RQT1(4),RCOS1(4),PDAT1(4),BA1(5),
        + RQT1(5),RCOS1(5),PDAT1(5),BA1(6),RQT1(6),RCOS1(6),PDAT1(6),
        + BA1(7),RQT1(7),RCOS1(7),PDAT1(7),BA1(8),RQT1(8),RCOS1(8),
        + PDAT1(8),BA1(9),RQT1(9),RCOS1(9),PDAT1(9),BA1(10),RQT1(10),
        + RCOS1(10),PDAT1(10),BA1(11),RQT1(11),RCOS1(11),PDAT1(11),
        + BA1(12),RQT1(12),RCOS1(12),PDAT1(12),SCOST1
C
C
         READ(INFILE,200,END-99) NSN,NAME,READI,ESS,CNT,ICC,SSC,FACT,
        + BAL(1),RQTY(1),RCOST(1),
        + PDATE(1),BAL(2),RQTY(2),RCOST(2),PDATE(2),BAL(3),RQTY(3),
        + RCOST(3),PDATE(3),BAL(4),RQTY(4),RCOST(4),PDATE(4),BAL(5),
        + RQTY(5),RCOST(5),PDATE(5),BAL(6),RQTY(6),RCOST(6),PDATE(6),
        + BAL(7),RQTY(7),RCOST(7),PDATE(7),BAL(8),RQTY(8),RCOST(8),
        + PDATE(8),BAL(9),RQTY(9),RCOST(9),PDATE(9),BAL(10),RQTY(10),
        + RCOST(10),PDATE(10),BAL(11),RQTY(11),RCOST(11),PDATE(11),
        + BAL(12),RQTY(12),RCOST(12),PDATE(12),SCOST
C
C   CONDUCT MATCH
C
   100   IF(NSN.EQ.NS1) THEN
             DO 40 J-1,12
                RCOST(J)-RCOST(J)-RCOS1(J)
                RQTY(J)-RQTY(J)-RQT1(J)
    40       CONTINUE
             SCOST-SCOST-SCOST1
           WRITE(OTFILE,200) NSN,NAME,READI,ESS,CNT,ICC,SSC,FACT,BAL(1),
        + RQTY(1),RCOST(1),
        + PDATE(1),BAL(2),RQTY(2),RCOST(2),PDATE(2),BAL(3),RQTY(3),
        + RCOST(3),PDATE(3),BAL(4),RQTY(4),RCOST(4),PDATE(4),BAL(5),
        + RQTY(5),RCOST(5),PDATE(5),BAL(6),RQTY(6),RCOST(6),PDATE(6),
        + BAL(7),RQTY(7),RCOST(7),PDATE(7),BAL(8),RQTY(8),RCOST(8),
        + PDATE(8),BAL(9),RQTY(9),RCOST(9),PDATE(9),BAL(10),RQTY(10),
        + RCOST(10),PDATE(10),BAL(11),RQTY(11),RCOST(11),PDATE(11),
        + BAL(12),RQTY(12),RCOST(12),PDATE(12),SCOST
C
```

F-26

```
      READ(COFILE,200,END=100) NS1,NAM1,READ1,ES1,CN1,IC1,SS1,FAC1,
     + BA1(1),RQT1(1),RCOS1(1),
     + PDAT1(1),BA1(2),RQT1(2),RCOS1(2),PDAT1(2),BA1(3),RQT1(3),
     + RCOS1(3),PDAT1(3),BA1(4),RQT1(4),RCOS1(4),PDAT1(4),BA1(5),
     + RQT1(5),RCOS1(5),PDAT1(5),BA1(6),RQT1(6),RCOS1(6),PDAT1(6),
     + BA1(7),RQT1(7),RCOS1(7),PDAT1(7),BA1(8),RQT1(8),RCOS1(8),
     + PDAT1(8),BA1(9),RQT1(9),RCOS1(9),PDAT1(9),BA1(10),RQT1(10),
     + RCOS1(10),PDAT1(10),BA1(11),RQT1(11),RCOS1(11),PDAT1(11),
     + BA1(12),RQT1(12),RCOS1(12),PDAT1(12),SCOST1
C
C
      READ(INFILE,200,END=99) NSN,NAME,READI,ESS,CNT,ICC,SSC,FACT,
     + BAL(1),RQTY(1),RCOST(1),
     + PDATE(1),BAL(2),RQTY(2),RCOST(2),PDATE(2),BAL(3),RQTY(3),
     + RCOST(3),PDATE(3),BAL(4),RQTY(4),RCOST(4),PDATE(4),BAL(5),
     + RQTY(5),RCOST(5),PDATE(5),BAL(6),RQTY(6),RCOST(6),PDATE(6),
     + BAL(7),RQTY(7),RCOST(7),PDATE(7),BAL(8),RQTY(8),RCOST(8),
     + PDATE(8),BAL(9),RQTY(9),RCOST(9),PDATE(9),BAL(10),RQTY(10),
     + RCOST(10),PDATE(10),BAL(11),RQTY(11),RCOST(11),PDATE(11),
     + BAL(12),RQTY(12),RCOST(12),PDATE(12),SCOST
C
C
      ELSE
         IF(NSN.GT.NS1) THEN
      READ(COFILE,200,END=100) NS1,NAM1,READ1,ES1,CN1,IC1,SS1,FAC1,
     + BA1(1),RQT1(1),RCOS1(1),
     + PDAT1(1),BA1(2),RQT1(2),RCOS1(2),PDAT1(2),BA1(3),RQT1(3),
     + RCOS1(3),PDAT1(3),BA1(4),RQT1(4),RCOS1(4),PDAT1(4),BA1(5),
     + RQT1(5),RCOS1(5),PDAT1(5),BA1(6),RQT1(6),RCOS1(6),PDAT1(6),
     + BA1(7),RQT1(7),RCOS1(7),PDAT1(7),BA1(8),RQT1(8),RCOS1(8),
     + PDAT1(8),BA1(9),RQT1(9),RCOS1(9),PDAT1(9),BA1(10) RQT1(10),
     + RCOS1(10).PDAT1(10),BA1(11),RQT1(11),RCOS1(11),PDAT1(11),
     + BA1(12),RQT1(12),RCOS1(12),PDAT1(12),SCOST1
C
C
         ELSE
      WRITE(OTFILE,200) NSN,NAME,READI,ESS,CNT,ICC,SSC,FACT,BAL(1),
     + RQTY(1),RCOST(1),
     + PDATE(1),BAL(2),RQTY(2),RCOST(2),PDATE(2),BAL(3),RQTY(3),
     + RCOST(3),PDATE(3),BAL(4),RQTY(4),RCOST(4),PDATE(4),BAL(5),
     + RQTY(5),RCOST(5),PDATE(5),BAL(6),RQTY(6),RCOST(6),PDATE(6),
     + BAL(7),RQTY(7),RCOST(7),PDATE(7),BAL(8),RQTY(8),RCOST(8),
     + PDATE(8),BAL(9),RQTY(9),RCOST(9),PDATE(9),BAL(10),RQTY(10),
     + RCOST(10),PDATE(10),BAL(11),RQTY(11),RCOST(11),PDATE(11),
     + BAL(12),RQTY(12),RCOST(12),PDATE(12),SCOST
C
C
```

```
      READ(INFILE,200,END-~9) NSN,NAME,READI,ESS,CNT,ICC,SSC,FACT,
    + BAL(1),RQTY(1),RCOST(1),
    + PDATE(1),BAL(2),RQTY(2),RCOST(2),PDATE(2),BAL(3),RQTY(3),
    + RCOST(3),PDATE(3),BAL(4),RQTY(4),RCOST(4),PDATE(4),BAL(5),
    + RQTY(5),RCOST(5),PDATE(5),BAL(6),RQTY(6),RCOST(6),PDATE(6),
    + BAL(7),RQTY(7),RCOST(7),PDATE(7),BAL(8),RQTY(8),RCOST(8),
    + PDATE(8),BAL(9),RQTY(9),RCOST(9),PDATE(9),BAL(10),RQTY(10),
    + RCOST(10),PDATE(10),BAL(11),RQTY(11),RCOST(11),PDATE(11),
    + BAL(12),RQTY(12),RCOST(12),PDATE(12),SCOST
C
      ENDIF
      ENDIF
      GOTO 100
C
  200 FORMAT(A13,A19,F8.3,A1,I3,A1,A1,F4.2,I9,I9,F10.2,I3,I7,I6,F10.2,
    + I3,I7,I6,F10.2,I3,I8,I6,
    + F10.2,I3,I8,I6,F10.2,I3,I8,I6,F10.2,I3,I8,I6,F10.2,I3,I8,I6,
    + F10.2,I3,I8,I6,F10.2,I3,I8,I6,F10.2,I3,I8,I6,F10.2,I3,I8,I6,
    + F10.2,I3,F12.2)
C
   99 CLOSE(INFILE)
      CLOSE(COFILE)
      CLOSE(OTFILE)
      STOP
      END
C
      SUBROUTINE TOTPUT(INFILE,COFILE,OTFILE)
C
      REAL MTCST(12),MTCS1(12),TCOS1,TCOST
      INTEGER INFILE,OTFILE,COFILE
C
      READ(INFILE,400) MTCST(1),MTCST(2),MTCST(3),MTCST(4),MTCST(5),
    + MTCST(6),MTCST(7),MTCST(8),MTCST(9),MTCST(10),MTCST(11),
    + MTCST(12),TCOST
C
      READ(COFILE,400) MTCS1(1),MTCS1(2),MTCS1(3),MTCS1(4),MTCS1(5),
    + MTCS1(6),MTCS1(7),MTCS1(8),MTCS1(9),MTCS1(10),MTCS1(11),
    + MTCS1(12),TCOS1
C
      DO 10 J-1,12
        MTCST(J)-MTCST(J)-MTCS1(J)
   10 CONTINUE
C
      TCOST-TCOST-TCOS1
C
      WRITE(OTFILE,400) MTCST(1),MTCST(2),MTCST(3),MTCST(4),MTCST(5),
    + MTCST(6),MTCST(7),MTCST(8),MTCST(9),MTCST(10),MTCST(11),
    + MTCST(12),TCOST
```

```
  400 FORMAT(64X,F14.2,14X,F12.2,15X,F11.2,16X,F11.2,16X,F11.2,16X,
     + F11.2,16X,F11.2,16X,F11.2,16X,F11.2,16X,F11.2,16X,F11.2,16X,
     + F11.2,F15.2)
C
      RETURN
      END
```

REPORT DOCUMENTATION PAGE

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	May 1991	

4. TITLE AND SUBTITLE

Rapid Response Mobilization Indicator

5. FUNDING NUMBERS

6. AUTHOR(S)

CPT Mark S. Melius, USA

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

HQ Defense Logistics Agency
Operations Research and Economic Analysis Office (DLA-LO)
Cameron Station
Alexandria, VA 22304-6100

8. PERFORMING ORGANIZATION REPORT NUMBER

DLA-91-P00249

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Defense Logistics Agency (DLA-PR)
Cameron Station
Alexandria, VA 22304-6100

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Public Release; Unlimited Distribution

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

Defense Logistics Agency's (DLA) Industrial Preparedness Program (IPP) planners envisioned an enhanced capability for assessing the Agency's readiness in supporting the Services' projected war reserve material requirements. Such capability would provide planners valuable information for identifying and prioritizing industrial planning workload, identifying potential supply problems, and assessing potential risks during the time of mobilization, and would serve as a source for basing critical resource allocation decisions. Two areas of immediate concern were the identification of items in which rapid industrial support would be required and the determination of funding requirements needed to procure DLA-managed parts for ODS. Based on the above requirements, a deterministic mainframe based model was developed. Capabilities of the model include calculating a "proactive" procurement schedule, determining ability of on-hand and due-in stocks in meeting mobilization requirements, and assessing summary funding requirements on an NSN and time horizon basis.

14. SUBJECT TERMS

Mobilization, Readiness, Inventory

15. NUMBER OF PAGES

71

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	